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Part of an early draft and also
the final draft of

Michael Servetus. London, Henry Frowde
Oxford University Press. 1909. H: 35. 8°

also published in Johns Hopkins Hosp. Bull, Baltimore, 1910.
xxi. H: 1–11.

[This paper was originally read at the J.H.H. Historical Club 1909. 10. May.
It was read again as an Extension lecture at the Oxford Summer School
1909. 10. Aug. (see Oxford Times. 14. Aug.). On 9. Aug. the O. read a paper
before the same students on "The Beginnings of Modern Medicine" (see Notes
of Unpublished Papers III. no.)]

This paper on
Servetus was
originally resd
at the JHH Hist.
Club May 10.1909
as appears from
the Minutes.

L.L.Mackall
Sept.10.1923

There is only one effective means of dealing with heresy & the church early found the out-. From ~~the 4th~~ to 5th century when the habit began to its apogee in St Bartholomews days. It was universally recognised that the dead heretic feared the burnesson. ~~There is~~ no History affords ample evidence the effacing of the measures often carried out on a scale of noble proportion. From is catholic body - nominal, because of the root and branch policy of the church. England's Protestantism is an inheritance from the thoroughness with which Henry VIII & Cranmer his lieutenant communicated not a policy of excommunication. Of a man as blank and insects upon having an opinion of his own, which is contrary to that held by the majority of fellow subjects and of this opinion as a permanent and may jeopardize the eternal salvation of a man it is much safer to burn him than to allow his pernicious doctrines to spread - this was our policy for more than 1200 years and it really answered admirably. 21 Kept heresy within narrow limits until the renaissance when the human spirit got out of hand. ~~Contemporarily and~~ of the very best of the day were converted into the death heretic, like Shakespeare the death of Stephen. Under the epoch of Protestantism men began to count it out not everywhere and the latter with fewer reformers whom they were not accustomed with the sudden epoch of Luther who.

Now of heretics are the best ones are very much readily deserved of their Medical Societies. A more atrocious apathetic Hackneyman heretic never ~~lived~~ paraded the church. How he could have dared to use its language.

The albigensian and Waldensian martyrs - those
" Three Slaughtered Saints whose bones
the Swallows in the alpine mountains cold
Guard the white flock of God's truth so pure & old
When all our fathers worshipped stocks & stones.

(Parg. Canto III. The Lord) has been one of the great breeding grounds of heretics, and the smoke of whose burning has been a sweet savour in the nostrils of Catholic & Protestant alike. Even today, so deeply ingrained ~~has become~~ is the Catholic creed, everything in the way of dogmatic vagary is condoned save denial of the Trinity which is usually regarded as put a man outside the pale of normal Christianity. Of this is the feeling being imagine what it must have been in the middle of the sixteenth century

Persecution for the defending of ~~an~~ own object was remarkably successful

Michel Servetus

1 Pamphlet attacking Trinity
2 Life of Th
3 ~~Letter~~ Dialogues on Trinity
4 Papists ~~&~~ and Physicians
5 ~~Book~~ the book.
6 His fate calvin

There must have been many ~~found~~ in the 16th century who to ~~many~~ earnest students of the bible ~~that were~~ the 16th century ~~must have had many persons~~ when days had come for the opening of the 2nd seal 2 bible of the Bible & Revelation when people should be bidden for the earth and they should Rest we ourselves

It is unlikely that Luther should have been so gentle as one member has stated & would Erasmus & Calvin

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Servetus

Notes

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r of the church we cannot call him wro
he wrote it, since his Church was the
was created in the minds of [illegible]
ent for a Resolute Athanasius, either
But no human [illegible]
ld ... could save it. The choice was [illegible] his
life & all that it meant to a man in that
if he would retract, but he could not
his conscience & remained faithful under
. An arch heretic from the standpoint of the
to the world [illegible] known by nearly
nearly 4 Truth, can be saved

says
e world's heart beats quicker & knit (such men

a heavy weight in the other scale
ems and sorrows of great men have a
an fascination for weak minds, more pathe
the ends which it is easy & comfortable
mmon."

rene - in happy - hour
of forest wanderings -

48

Servetus about to declare in
His well known book Errors of the Church of the 3rd & 4th centuries
was in the subject of the Trinity; and the final conquest of
Arianism found its expression in that magnificent Catholic
document the Athanasian Creed, which the Church has
forever called the Guestion. Officially. But there have
always been turbulent souls who could not rest satis-
fied God who would bring up unpleasant points from
the Bible, men who were not able to accept Dante's
wise advice "Mad is he who hopes that man's reason can
traverse the infinite way which One Substance in Three
Persons holds. Be content O human race with the quia"
(Purg. end iii. The problem has been one of the great breeding
grounds of heretics, and the smoke of whose burning has
been a sweet savour in the nostrils of Catholic & Protestant
alike. Even today, so deeply ingrained in the Catholic
creed, everything in the way of doctrinal vagary is condoned
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as put a man outside the pale of normal Christianity.
If this is the feeling today imagine what it must have
been in the middle of the sixteenth century

Persecution for [illegible] & non object was remarkably
Michael Servetus successful

1 Pamphlets of the 4 c.
2 Life + Th
3 [illegible] Thirty cents
4 Paris + and Physicky -
5 [illegible] the book.
6 His fate calvin

There must have been many learned in the 16th and other
To [illegible] earnest students of the bible [illegible] the
16th century must have had many periods when
days had come for the opening of the 2nd seal
[illegible] of the bull of Revelation when people should
be killed for the earth and they should [illegible]
one another
How unlikely that Luther should have been so gentle after
one reminded his old Adam and other [illegible] Jews

Servetus — notes

a Martyr of the church we cannot call him nor could he wish it, since his Church was one that has never ceased in the need of [illegible] reformers who have [illegible] a resolute Christianity a [illegible] a "of Truth" [illegible] & Truth — as he saw it. The choice was [illegible] life & all that it meant to a man in those times, if he would retract, but he could not be to his conscience & remained faithful unto death. An arch heretic from the standpoint of the church the world [illegible] knows his memory as a Martyr & Truth, as he saw it

as Lowell says
"The world's heart beats quicker & kindlier when

"There is a heavy weight in the other scale
The sins and sorrows of great men have a peculiar fascination for weak minds, more particularly the sins [illegible] which it is easy & comfortable for ordinary understandings"

Repeat Verse - in happy & how
a state of fossil unintellectuality -
The Gentler fruits of the spirit
The peace of God which passeth understanding

when a belief in everlasting torment - & the determination to life once when the door of persecution is the instrument - energies

In spite of this remarkable discovery he is really more interesting as a theologian than as a physiologist. There is not enough of the latter to form an opinion upon but much of the former that

Vienne. Arnollet.
Paris Johann Thibault. -

Born 2nd March 1535 - med fac. Par.
He was a low county - man who had studied & practised in many places - Francis
heard of his skill in Cambray when Tunstall
practised at Nevers. In 1531
He received calendars & yearly progressions
He had repeated fights with the faculty.
T appealed to the King -

Champier

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~~ress~~ by William Osler, M. D., F. R. S., Regius Professor
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V. A. 78 T Thibault

Royal body phy & court astrologer - M.S.
Paris friend
Tollin will have it that he was a reformer in
Theology Philosophy, Jurisprudence, Geography
Medicine & Physiology
Friends. Guy Perrin in Geneva.
Vienne. Arnollet.
Paris Johann Thibault. -

Born 2nd March 1535 - med fac. Par.
He was a low cunning man who had studied
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1. Vallender

MICHAEL SERVETUS.

~~An address~~ by William Osler, M. D., F. R. S., Regius Professor of Medicine, Oxford University, ~~Oxford~~, ~~England~~.

The year 1553 saw Europe full of tragedies, and to the earnest student of the Bible it must have seemed as if the days had come for the opening the second seal spoken of in the Book of Revelations when peace should be taken from the earth and men should kill one another. One of these tragedies had a mournful interest ~~for us on account of the chief actor~~ for the medical profession; yet it was but one of thousands of similar cases with which the history of the 16th century is stained. Shortly after twelve o'clock on October 27th a procession started from the town-hall of Geneva--the chief magistrates of the city, the clergy in their robes, the Lieutenant Criminel and other officers on horseback, a guard of mounted archers, the citizens, and a motley crowd of followers, and in the midst, with arms bound, in shabby dirty clothes, walked a man of middle age whose intellectual face bore the marks of long suffering. Passing along the rue St. Antoine through the gate of the same name the cortege took its way towards the Golgotha of the city. Once outside the walls a superb sight broke on their view--in the distance the blue waters and enchanting shores of the lake of Geneva, to the west and north the immense amphitheatre of the Jura with its snow-capped mountains and to the south and west the lovely valley of the Rhone, but we may well think that few eyes were turned away from the central figure of that sad procession. By his side in earnest entreaty walked the aged Pastor Farel who had devoted a long and useful life to the service of his fellow citizens. Mounting the hill the field

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(1) This address was delivered at the Johns Hopkins Medical School Historical club and as an extension lecture in the Summer school, Oxford.

of Champel was reached and here on a slight eminence was the fateful stake with the dangling chains and heaping bundles of fagots. At this sight the poor victim prostrated himself on the ground in prayer. In reply to the exhortation of the clergyman for a specific confession of faith there was the cry, Misera cordia, misera cordia! Jesu! thou Son of the eternal God, have compassion upon me." Bound to the stake by the iron chain with a chaplet of straw and green twigs covered with sulphur on his head, with his long dark face, it is said that he looked like the Christ in whose name he was bound. Around his waist were tied a large bundle of manuscript and a thick octavo printed book. The torch was applied and as the flames spread to the straw and sulphur and flashed in his eyes there was a piercing cry that struck terror into the hearts of the bystanders. The fagots were green, the burning was slow and it was long before in ~~his~~ a last agony he cried again, "Jesu, thou Son of the eternal God have mercy upon me." Thus died ~~in this miserable way~~ in his forty-fourth year Michael Servetus, Villanovanus, physician, physiologist and heretic. Strange, is it not? that could he have cried "Jesu! thou Eternal Son of God" even at the last moment the chains would have been unwound, the chaplet removed & the faggots scattered, but he remained faithful unto death to what he believed was the Truth as revealed in the Bible.

The story of his life is the subject of my address ~~this evening.~~

BIRTH AND EDUCATION. 1509 or 1511. He gave separate versions at his trial. Former date usually supposed to be correct.

Place. Usually given Villaneuva of Aragon and this is what ~~he~~ S said, but his family was connected with Villeneuva

~~Hebrew, the last two very unusual accomplishments at that period.~~

We next hear of him at Toulouse, studying canon and civil law. He could not have been twenty when he entered the service of the Friar Quintana, confessor to the Emperor Charles the vth, apparently as his private secretary, ~~and~~ In the suite of the

Emperor

Emperor he went to Italy, and was present when Pope and Emperor entered Bologna, and "he saw the most powerful Prince of the age at the head of 20,000 veterans kneeling and kissed the feet of the Pope". Here he had his first impression of the worldliness and mercenary character of the Papacy, hatred of which, very soon after, we find to have become an ~~perfect~~ obsession.

Michel

Michael Servetus, known also as Villeneuve, or Michael Servetus Villanovanus, or as he puts in one of his books, alias Reves, was a Spaniard born at Villanouva de Sigena, in the present province of Huesca. When on trial at Vienne, he gave Tudela, Navarre as his birth-place at Geneva ~~he said~~ Villanova of Arragon; and at one place he gave as the date of his birth 1509 and at the other 1501. The former is usually thought to be the more correct. As at Villanueva de Sigena, there are records of his family, and as the family altar still exists, made by the father, we may take it that at any rate the place of his birth is settled. The Altar- screen is a fine piece of work, with ten paintings. I am endebted to Signor Antonio Virgili, of Barcelona, for the photograph of it here repro--duced. (fig.). ~~It is in the fine old Monastery of St. John of Jerusalem, founded in 1187.~~ Servetus ~~He~~ seems to have belonged to a good family in easy circumstances, and at his trial he said he came of an ancient race, living nobly.

From the convent school he probably went to the neighbour--ing University of Saragossa. Possibly he may have studied for the priesthood, but however that may be, there is evidence that he was a ~~most~~ precocious youth, and well read in Latin, Greek and Hebrew, the last two very unusual accomplishments at that period.

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Emperor he went to Italy, and was present when Pope and Emperor entered Bologna, and "he saw the most powerful Prince of the age at the head of 20,000 veterans kneeling and kissed the feet of the Pope". Here he had his first impression of the worldliness and mercenary character of the Papacy, hatred of which, very soon after, we find to have become an ~~perfect~~ obsession.

In the summer of 1530 the Emperor attended the Diet of Augsburg, where the Princes succeded in getting Protestantism recognized politically. ~~Attendance of~~ Such a gathering must have had a profound influence on the young student, already we ~~must~~ may suppose, ~~badly~~ infected with the new doctrines. Possibly at Saragossa, or at Toulouse he may have ~~made the acquaintance of~~ become acquainted with the writings of Luther. Such an expression of opinion as the following, written before his 21st year, could scarcely have been of a few months' growth: -- "For my own part I neither agree nor disagree in every particular with either Catholic or Reformer. Both of them seem to me to have something of truth and something of error in their views; and whilst each sees the other's shortcomings, neither sees his own. God in his goodness give us all to understand our errors and incline us to put them away. It would be easy enough, indeed, to judge dispassionately of everything, were we but suffered without molestation by the churches freely to speak our minds." (Willis)

How far he held any personal communication with the German reformers is doubtful. It is quite possible, and Tollin, his chief biographer, makes him visit Luther. We do not know how long he held service with Quintana, Tollin thinks a year and a half It is not unlikely that the good Friar was glad to get rid of a young

was to come who should be the Son of God. This is the earliest intimation we have as to the speculations which were occupying the mind of the young scholar. It is highly significant that from

(1) Harvard Theological Review, April 1909.

form the start he was impressed with what we should now call the historical view of theology. As he read the Old Testament, its writers seemed to him to be referring to things that their hearers would understand. Their gaze into the future was limited by the fortunes of their people at the moment. To imagine them possessed

young secretary infected with ~~such grievous~~ so shocking heresy as that contained in his first book, published in 1531; indeed there is a statement to the effect that a monk in the suite of Quintana found the book in a shop at Ratisbon, and hastened to tell the Confessor of its ~~shock-ing~~ terrible contents. Servetus ~~He~~ had plunged headlong into studies of the most ~~complicated and~~ dangerous character, ~~which he~~ and even them had embooked in a small octavo volume, entitled 'De Trinitatis erroribus', which appeared without the printer's name, but on the title page, the author, Michael~~us~~ Serveto, alias Reves ab Aragonia, Hispanium. In the innocency of his heart he thought ~~it~~ the work would be a good introduction to the more liberal of the Swiss reformers, but they would have none of it, and were inexpressibly shocked at its supposed blasphemies. Nor did he fare better at Strassburg; ~~Aeolampadius~~, and even the kind hearted Bucer, said that the author of such a work should be disemboweled and torn in pieces.

In ~~these~~ thorny theological questions a layman ~~one~~ naturally seeks shelter, and I am glad to ~~have found~~ quote the recent opinion of a distinguished student of the period, Professor Emerton,(1) on this youthful phase of the life of Servetus. "He would not admit that the eternal Son of God was to appear as man, but only that a man was to come who should be the Son of God. This is the earliest intimation we have as to the speculations which were occupying the mind of the young scholar. It is highly significant that from

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form the start he was impressed with what we should now call the historical view of theology. As he read the Old Testament, its writers seemed to him to be referring to things that their hearers would understand. Their gaze into the future was limited by the fortunes of their people at the moment. To imagine them possessed of all the divine mysteries and to have in mind the person of the man Jesus as the ultimate object of all their prophetic vision was to reflect back the knowledge of history into a past to which such knowledge was impossible. So far as I can understand him, this is the key to all Servetus' later thought. His manner of expressing himself is confusing and intricate to the last degree, so much so that neither in his own tme nor since has anyone dared to say that he understood it. To his contemporaries he was a half-mad fanatic; to those who have studied him, even sympathically, his thought remains to a great extent enigmatical; but this one point is fairly clear: that he grasped, as no one up to his time had grasped, this one central notion, that, whatever the divine plan may have been, it must be revealed by the long slow movement of history -- that, to understand the record of the past, it must be read, so far as that is possible, with the mind of those to whom it was immediately addressed, and must not be twisted into the meanings that may suit the fancy of later generations."

"To have seized upon such an idea as this - - an idea which has begun to come to its rights only within our memories --

was

-cussions on theological questions. One may conclude from the reproachful sentence of Calvin many years later, 'Vous avez fuy le luite', that arrangements had been made for a public debate.

After a short stay at Avignon and Orleans we next find Servetus at Lyons, in the employ of the Trechsels brothers, the

famous

(8)

fmaous ~~publishers~~ printers. Those were the days of fine editions of the Classics and other books, which required the assistance of scholarly men to edit and correct;

He brought out a splendid ~~folio volume~~ of Ptolemy's Geography (1535), ~~interest-~~ ~~-ing from the~~ with- ~~extensive~~ commentaries ~~he makes~~ on the different

7

was an achievement which marks this youth of twenty as at all events an extraordinary individual, a disturbing element in his world, a man who was not likely to let the authorities rest calmly in possession of all the truth there was."

In the following year 1532, two dialogues appeared explanatory and conciliatory, ~~but the~~ a little book which only aggravated the offence, and feeling the Protestant atmosphere too hot, Servetus ~~he~~ went to Paris, ~~and~~ dropping this name ~~of Servetus~~, by which he has been known, for the next twenty one years ~~he is known as~~ we now follow Michel Villeneuve, or Michael Villanovaus, closing this ~~burying~~ a brief but stormy ~~past~~ period ~~but~~ in a varied career as student, lecturer, practitioner, author and editor, still nursing the unconquerable hope that he might reform ~~the world if he~~ could but restore the primitive doctrine of the church.

II

We know very little of this his first stay in Paris. Possibly he found employment as teacher, or as reader ~~to~~ the press. At this period his path first crossed that ~~of the~~ young student Calvin then a ~~Calvin~~ ~~who was to play so important a role in the Reformation, and who twenty years later was to bring him to the stake~~. Of about the same age, both ardent students, both on the high-road of emancipat-ion from the faith of their birth, they must have had many dis-cussions on theological questions. One may conclude from the reproachful sentence of Calvin many years later, 'Vous avez fuyle luite', that arrangements had been made for a public debate.

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He brought out a splendid ~~volume~~ folio of Ptolemy's Geography (1535), ~~interest-~~ ~~-ing from the~~ with ~~extensive~~ commentaries ~~he makes~~ on the different countries, which shewed a wide range of knowledge in so young a man. ~~He showed also in it the tendency to sharp hostile~~ It is marked also by many examples of independent criticism, as when speaking of ~~the Holy Land~~ Palestine, he says that 'the Promised Land' was anything but a 'Promising Land', and instead of flowing with milk and honey, and a land of corn, olives and vine-yards, it was inhospitable, barren, and the stories about its fertility nothing but boasting and untruth. He seems to have been brought to task for this, as in the second edition, 1541, this section does not exist. He was paid by the Trechsels for this work 500 crowns.

It is ~~quite~~ possible that Rabellais ~~and~~ Servetus may have met at Lyons, as at this time the great Dissimulator ~~who~~ was physician to the Hotel Dieu, but there is nothing in the writings of either ~~of these men~~ to indicate that they had met. The man who had the greatest influence upon him at Lyons was Symphorien Champier, one of the most ~~characteristic~~ interesting and distinguished of the medical humanists of the early part of the 16th century. Servetus helped him with his French Pharmacopoeia, and Pastor Tollin will have it that Champier even made a home for the poor scholar. An ardent Galenist an historian, the founder of the hospital, and of the medical school, Champier had the usual predilection of the student of those days for

~~been men after his own heart, ripe scholars, ardent Galenists,~~
and keen anatomists. In his Anatomical Institutions, (Basel 1539) Guinther speaks of Servetus in connection with Vesalius, who was at this time ~~appears to have been~~ his fellow pro-sector. "And after him by Michael Villanov-anus, distinguished by his literary acquirements of every kind, and scarcely second to any in his knowledge of Galenical doctrine".

With

With their help he states that he has examined the whole ~~subject~~ body, and demonstrated to the students all of the muscles, veins, arteries and nerves. There was at that time a very keen revival in the study of anatomy in Paris, and to have been associated with such a young genius as Vesalius, already a brilliant dissector, must have been in itself a liberal education in the subject.

~~Of~~ astrology. Probably From him ~~it was perhaps that~~ Servetus received his instructions in the subject. At any rate when the distinguished Professor of medicine of Tubingen ~~attacked~~ Fuchius, attacked Champier on the ground of his astrological vagaries, Servetus took up his pen and replied in defense ~~by~~ with a panphlet entitled "In Leonhardum Fuchsium defensio apologetica pro Symphoriano Campeggio", an exceedingly rare item, the only one indeed of the writings of Servetus that I have not ~~consulted~~ seen in the original.

Stimulated by the example and precept of Champier, Servetus returned to Paris to ~~take up the~~ study of medicine. Fairly rich in pocket with the proceeds of his literary work, he attached himself, first to the College of Calvi, and afterwards to that of the Lombards, and it is said that he took the degrees of M.A. and M.D., but I am told that ~~of this~~ of this there is no documentary evidence ~~at Paris~~

~~His chief teachers, Winter of Andernach, Sylvius~~

Of his life in Paris we have very little direct evidence, except in connection with a single incident. We know that he came into intimate contact with three men, Guinther of Andernach, Jacobus Sylvius and Vesalius. Guinther and Sylvius must have been men after his own heart, ripe scholars, ardent Galenists, and keen anatomists. ~~On~~ In his Anatomical Institutions, (Basel 1539) Guinther speaks of ~~him~~ Servetus in connection with Vesalius, who ~~appears to have~~ was at this time ~~been~~ his fellow pro-sector. "And after him by Michael Villanov-anus, distinguished by his literary acquirements of every kind, and scarcely second to any in his knowledge of Galenical doctrine".

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It is easy to understand whence was derived the anatom-ical knowledge upon which was based the far reaching generalization with which the name of Servetus is associated in physiology.

2. Trial

But the Paris incident of which we know most is connect-ed with certain lectures on judicial astrology. We have seen that at Lyons, Servetus had defended his friend and patron Symphorien Champier ~~for the practice of astrology~~, through whom he had ~~and~~ doubtless ~~in this way he~~ became familiar with its practice. Though forbidden by the Church, judicial astrology was still in favour in some universities and was practised largely by physicians occupying the most distinguished position. It was contrary to the regulations of the Paris Faculty to lecture on the subject, though the king had in his employ a professional astrologist, Thibault. Shortly after reaching Paris Servetus began a course of lectures on the subject, which very soon brought him into conflict with the authorities.

The admirable practice ~~in the Paris Faculty,~~ for the Dean to write out each year his report, has preserved for us the full details of the procedure against Servetus. Duboulay in his 'History of the University of Paris' Vol.vi, has extracted the whole affair from

In those days few were strong minded enough to defy augury, and in pursuit of belief all were servile to obey influence the

many attempts, and after appealing to the theological faculty, and the congregation of the university, the ~~matter~~ question was taken up by parliament. The speeches of ~~the~~ Council for the Faculty, for the ~~U~~niversity ~~and~~ for Villanovanus and for the Parliament are given in full The parlaiment decided that the printed apology should be recalled; booksellers were forbidden to keep them ~~It~~ Lectures on astrology were forbidden, and Villanovanus was urged to treat the Faculty with respect. But on their part they were

asked

asked to deal with the offender gently, and in a parental fashion. It is a very interesting trial, and the Dean evidently enjoyed his triumph. He says that he took with him three theologians, two Doctors in medicine, the Dean of the Faculty of Canonical law,

19.

the Dean's Commentary, as it is called, of the year. He says that a certain student of medicine, a Spaniard, or as he says, from Navarre, but with a Spamish father, had taught for some days in Paris in 1537, judicial astrology, or divination. After having found out that this was condemned by the Doctors of the Faculty, he caused to be printed ~~in the public~~ a certain apology in which he attacked the doctors, and moreover declared that wars and pests and all the affairs of men depended on the heavens and on the stars, and he imposed on the public by confounding ~~true~~ and judicial astrology. The Dean goes on to state, that accompanied by two of his colleagues, he tried to prevent Villan--ovanus from publishing the apology, and met him leaving the school where he had been making a dissection of the body with ~~the~~ a surgeon, and in the presence of several of the scholars, and of two or three Doctors, he not only refused to stop the publication, but he threatened the Dean with bitter words.

The Faculty appears to have had some difficulty in getting the authorities to ~~take up the question~~ move in the matter. Possibly we may see here the influence of the court astrologer, Thibault. After many attempts, and after appealing to the theological faculty, and the congregation of the university, the ~~matter~~ question was taken up by parliament. The speeches of ~~the~~ Council for the Faculty, for the University ~~and~~ for Villanovanus and for the Parliament are given in full. The parlaiment decided that the printed apology should be recalled; the booksellers were forbidden to keep them. The lectures on astrology were forbidden, and Villanovanus was urged to treat the Faculty with respect. But on their part they were

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asked to deal with the offender gently, and in a parental fashion. It is a very interesting trial, and the Dean evidently enjoyed his triumph. He says that he took with him three theologians, two Doctors in medicine, the Dean of the Faculty of Canonical law, and the Procurator General of the University. The affair was discussed by parliament with closed doors.

The "Apologetica disceptatio pro astrologia", ~~is~~ the rarest of the Servetus items, the only copy known being in the Bibliotheque Nationale ~~(5228e), It~~ is an eight leaf pamphlet, without title page, pagination or printer's name. The friends of the Faculty must have been very successful in their confiscat-ion of the work. Tollin who discovered the original has reprinted it (Berlin 1880).

Though the unlawfulness and folly of astrology had begun to be recognized in learned circles, divination, and the casting of horoscopes was a very common practice, and is reported even by teachers of the highest distinction. In those days few were strong enough to defy augury, and in popular belief ~~man~~ all were servile to all 'skey' influences.

It was not hard for Servetus to cite powerful authorities on his side in his 'Apologia', and he summons the great quartette, Plato, Aristotle. Hipocrates and Galen ~~to~~ as his defence. A practical star-gazer, he took his own observations, and ~~in~~ the pamphlet

records

some revelation, and Cabala from above, rather then any Philosophy, or speculation here below."

among

Among the auditors of Servetus was a young man, Pierre Paumier, the Archbishop of Vienne, who appears to have befriended him in Paris, and who a few years later asked him to be his body physician.

The astrology trial was settled in March 1537. Servetus

records an eclipse of Mars by the moon. He must too have been a student of the weather, as he speaks of giving in his lectures public predictions which caused great astonishment. The influence of the moon in determining the critical days of diseases, a favourite doctrine of Galen, is fully discussed, and he says that Galen's opinion should be written in letters of gold. He rests content with these great authoriries, referring very briefly to one or two minor lights. He scoffs at the well known bitter attack on Divination by Picus. It took several generations to radicate completely from the profession and belief in astrology, which lingered well into the 17th century.

In his 'Vulgar Errors' discussing the 'Canicular' or 'Dog Days', Sir Thomas Browne expresses his opinion of astrology in the most characteristic language. "Nor do we hereby reject or condemn a sober and regulated Astrology; we hold there is more truth therein then in Astrologers; in some more then many allow, yet in none so much as some pretend. We deny not the influence of the Starres, but often suspect the due application thereof; for though we should affirm that all things were in all things; that heaven were but earth celestified, and earth but heaven terrestrified, or that each part above had an influence upon its divided affinity below; yet how to single out these relations, and duly to apply their actions, is a work oft times to be effected by some revelation, and Cabala from above, rather then any Philosophy, or speculation here below."

Among the auditors of Servetus was a young man, Pierre Paulmier, the Archbishop of Vienne, who appears to have befriended him in Paris, and who a few years later asked him to be his body physician.

The astrology trial was settled in March 1537. Servetus cannot have been very long a student of medicine, but never lacking in assurance, he came before the world as a medical author in the little treatise on 'Syrups and their use' (729). He had been associated ~~for some time~~ with Champier, whom he had made familiar with the subject, and had helped ~~him~~ in ~~the~~ an edition of his French Pharmacopeia. The first three chapters are taken up with the views on 'Concotions' or Digestions' , of which at that time a series, from the first to the fourth was recognized. He pleads for a unity of the process, and as Willis remarks, he makes the very shrewd remark at that day, 'that diseases are only perversions of natural functions and not new entities introduced into the body'.

The greater part of the treatise is taken up with theoretical discussions on the opinions of Galen, Hippocrates and Avicenna ~~Aristotle~~. The 'Composition and use of the Syrups' is deferred to the fifth and concluding (6th) chapters.

we have a glimpse of a genial group of companions, all interested in the new studies. Several critical items in the edition of 1535 disappear in the new one of 1541 e.g. the scoffing remarks about Palestine; and in mentioning the ~~R~~royal ~~t~~touch, instead of, "I have myself seen the King touching many with this disease (i.e. Scrofula) but I have not seen that they were cured", he says , "I have heard

that

that many were cured". ~~No doubt~~ Perhaps he felt it unbecoming in a member of an ecclesiastical circle living under the patronage of the Archbishop to say anything likely to give offence.

In the following year he issued an edition of Pagnini's Bible in a fine folio (7½") Its chief interest to us is the testimony

III

The little book appears to have been popular, and was reprinted twice at Venice, 1545 and 1548, and twice at Lyons, 1546 and 1547.

Whether the adverse decision of Parliament disgusted him with Paris, or whether through some friend the opportunity to settle in practice had offered itself, we next hear of Villeneuve at Charlieu, a small town about 12 miles from Lyons, where he ~~appears to have~~ spent a year, or part of the year 1538-9. Here his old Paris friend Paumier sought him and induced him to settle at Vienne, an offering him appartments in the palace, and the appointment as his body physician. After nearly ten years of wandering, ~~Servetus~~ at last found a peaceful home in the fine old Roman city ~~with its fine antiquities and~~ with its good society, and here under the protection of the Primate of all France, Servetus spent the next ~~14~~ fourteen years as a practising physician.

~~But~~ few details of his life are known. He ~~kept up~~ retained his association with the Trechsels, the printers, who had set up a branch establishment in Vienne. In 1542 he brought out a new edition of Ptolemy, with a dedication to the Archbishop. From this preface we have a glimpse of a genial group of companions, all interested in the new studies. Several critical items in the edition of 1535 disappear in the new one of 1541 e.g. the scoffing remarks about Palestine; and in mentioning the ~~R~~royal ~~t~~touch, instead of, "I have myself seen the King touching many with this disease (i.e. Scrofula) but I have not seen that they were cured", he says , "I have heard

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In the following year he issued an edition of Pagnini's Bible in a fine folio (7fq). Its chief interest to us is the testimony that Servetus was still deep in theological studies, for the commentaries in the work place him among the earliest and boldest of the higher critics. The prophetic ~~songs~~ psalms, and the numerous prophesies in Isiah and Daniel are interpreted in the light of contempory events, but as Willis remarks 'These numerous excess-ively free and highly heterodox interpretations appear to have ~~brought~~ lost Villeneuve neither countenance nor favour at Vienne.

For another Lyons publisher, Frelon, he ~~Villeveuve~~ edited a number of educational works, and through him the Vienne physician was put in correspondence with the Geneva reformer.

~~Villeneuve was~~ Servetus ~~a~~ was a dreamer, an enthusiast, a mystic, possess-ed with the idea that could but the doctrines of the church be reformed the world could be ~~made anew in~~ won to a primitive, simple christianity. We have already seen his attempt to bring the Swiss reformers into what he thought correct views upon the Trinity He now began a correspondence with Calvin on this subject, and on the question of the Sacraments. The letters, ~~to Calvin~~ which are extant, ~~but~~ ~~their~~ ai / one ~~as much as their~~ and contents shocked and

disgusted

Intended for distribution in Germany, Switzerland and Italy the work was made up into bales of 100 copies for distribution to the trade. Probably from their mutual friend Frelon, Calvin ~~rec~~ever~~ed~~ received a couple of copies. The usual story is that through one William Trie as a medium, Calvin denounced Villeneuve to the Inquisition at Vienne. This ~~is~~ was the view taken by Willis, Tollin of Servetus himself and is supported by

and

and others. But advocates of Calvin continue to deny that there is sufficient evidence of his active participation at this stage.

There was at this time at Lyons the well known inquisitor Orry, who ten years before had brought Etienne Dolet to the stake No sooner had he got scent of the affair than he undertook the prosecution with his customary zeal, and Villeneuve was arrested Servetus

disgusted Calvin to such a degree, that in a ~~letter~~ communication to Farel, dated Feb.1546, ~~he~~ after stated that Servetus had offered to come to Geneva ~~and~~ he adds, "I will not pledge my faith to him; for did he come if I have any authority here I should never suffer him to go away alive".

For years Servetus had in preparation ~~a great~~ the work which he fondly hoped would restore primitive christianity. Part of ~~an~~ a MS of this he had sent to Calvin. ~~In 1552~~, Having tried in vain to get it published, he decided to print it privately at Vienne. Arrangements were made with a local printer, who set up a separate press in a small house, and in a few months 1,000 copies were printed. The title-page here reproduced (Fig) has the date 1553, and on the last page the initials of his name,'M.S.V.'

~~Servetus~~ He must have known that the work was ~~one~~ likely to cause great commotion in the church, but he ~~appears however to have~~ hoped that the identity of the author would ~~escape detection~~ be as little as that ~~and that no one would~~ suspect the Vienne physician, ~~any more than they had the slightest idea that he~~ Michel Villeneuve was ~~the~~ Michael Servetus of the heretical "de Trinitatis Erroribus", ~~of 1531~~.

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There was at this time at Lyons the well known inquisitor Orry, who ten years before had brought Etienne Dolet to the stake No sooner had he got scent of the affair than he undertook the prosecution with his customary zeal, and Servetus ~~Villeneuve~~ was arrested. The preliminary trial at Vienne is chiefly of interest on account of the autobiographical details which Servetus gives. The evidence against him was so overwhelming that he was committed to prison. ~~He was however~~ surrounded by his friends who must have been greatly shocked and distressed to find their favourite physician in so terrible a plight, ~~Many~~ abundantly supplied with money him was forthcoming, with the prison discipline ~~was~~ very lax, as the jailer was his friend, ~~and~~ it is not surprising that the day after his commitment, Servetus ~~it was found that the bird had flown;~~ escaped, greatly no doubt to the relief of the Archbishop and the ~~Vienne~~ authorities. The inquisitor had ~~the cold comfort of~~ to be content with burning ~~only~~ an effigy of the heretic, with some 500 copies of his work.

From the 7th of April until the middle of July Servetus disappears from view, and we next meet with him ~~of~~ in all places ~~in~~ the world ~~at~~ Geneva. Why he should have run this risk has been much ~~disputed~~ canvassed, but the explanation given by Guizot is probably the correct one. At that time the Liberals, or 'Libertines' as they were called because of their hostility to Calvin, fully expect~~-ed to triumph~~-ed to triumph. "One of their leaders, Ami Perrin, was first

Syndic

without proper clothing, and a prey to vermin. Mademoiselle Anne has well depicted this phase of the martyr's career in her fine statue which has been erected at Anamnese, and which is here reproduced, at (Fig.) The full report of the trial may be followed in the account given by Willis, and the 'Proces Verbal' was in existence at Geneva in manuscript-

One thing seems clear, that while at first the accusations

accusations ~~seem~~ were largely ~~to have been~~ concerned with ~~his~~ His heretical views, of Servetus later the public prosecutor laid ~~much~~ more stress upon the political side of the case, accusing him of conspiracy with the libertines. ~~Evidently~~ The final ~~case~~ divided Geneva into hostile camps, and it sometimes ~~must have~~ looked as though Calvin, quite as much as Servetus was on trial ~~for his life~~. To strengthen

Syndic: -- a man of their party, Gueroult, who had been banished from Geneva, had been corrector of the press at the time when the 'Restoration of Christianity' was published, and thanks to the influence of his patrons the Libertines, he had returned to Geneva, and would naturally be the medium between them and Servetus. Taking a comprehensive view of the whole case and the antecedents of all those concerned in it, I am convinced that Servetus, defeated at Vienne went to Geneva, relying on the support of the Libertines, whilst they on their side expected to obtain efficacious help from him against Calvin". He seems to have been nearly a month in Geneva before his arrest on the morning of August the 14th.

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~~The full account of this famous heresy is no longer~~

The full account of this famous heresy trial has lost much of its interest ~~so~~ far as the doctrinal details are concerned. At this distance, ~~and with~~ our modern ideas, the ~~whole~~ procedure seems very barbarous. Servetus was cruelly treated in prison, and there is a letter from him which speaks of his shocking condition without proper clothing, and a prey to vermin. Madamoiselle Rock has well depicted this phase of the martyr's career in her fine statue which has been erected at Anamnese, and which is here reproduced, at (Fig.) The full report of the trial may be followed in the account given by Willis, and the 'Proces Verbal' was in existence at Geneva in manuscript-

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accusations ~~seem~~ were largely ~~to have been~~ concerned with ~~his~~ heretical views of Servetus, later the public prosecutor laid ~~much~~ more stress upon the political side of the case, accusing him of conspiracy with the libertines. ~~Evidently~~ The final ~~case~~ divided Geneva into hostile camps, and it sometimes ~~must have~~ looked as though Calvin, quite as much as Servetus, was on trial ~~for his life~~. To strengthen their hands the clerical party appealed to the Swiss churches. The answer ~~was~~ strong enough in condemning the heresy and blasphemy ~~but~~ refrained from specifying the kind of punishment.

Accustomed in France to hear the Swiss Reformers branded as the worst type of heretics, Servetus appears never to have understood why he should not have been received with open arms by the Protestants, whose one desire was the same as his own, the restoration of ~~the~~ primitive faith and practice. He made a brave ~~strong~~ fight, and brought strong counter charges against Calvin, whom he accused specifically of causing his arrest at Vienne. He offered to discuss the questions at issue [publicly ~~with Calvin~~, an offer which Calvin would have accepted had the syndics allowed, (Slip 9 Matt)

The whole city was in a ferment ~~over the trial~~, and Sunday after Sunday Calvin and the other Pastors thundered from their pulpits against the blasphemies of the Spaniard. After dragging its weary length for nearly two months, the public feeling veered strongly to the side of Calvin, and on October 27th the Council by a majority vote, resolved that in consideration for his great errors and blasphemies, the prisoner should be burnt alive. servetus

filled him with terror".

There will be dedicated ~~in a few days~~ shortly, on August 13th, at Vienne, a monument commemorating the services of Servetus as an independent spirit in theology, and a pioneer in physiology. It has been said that Sapho survives because we sing her songs, and Aeschylus because we read his plays, but it would be difficult to explain the wide-

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spread interest in Servetus from any knowledge men have of his writings. The pathos of his fate, which scandalized Gibbon more profoundly than all the human heccatombs of Spain or Portugal, accounts for it in part. Then there is the limited circle of those who regard him as a martyr to the Unitarian confession; while scientific

Servetus appears to have been a curious compound of audacity and guileless. The announcement of his condemnation appears to have completelt stunned him, and as he ~~would~~ seem never to have considered ~~no idea whatever of the~~ its possibility ~~of a condemnation~~. He sent for Calvin and to ask his pardon. ~~The account which~~ but there was bitterness in the heart of the great Reformer ~~gives~~ whose account of the interview is not very pleasant reading ~~creditable to his heart~~.

On the morning of the 27th, the Tribunal assembled before the porch of the Hotel de Ville to read to the prisoner his formal condemnation, under ten separate heads, the two most important of which relate to the doctrine of the Trinity, and the Infant Baptism It is curious that under one of the headings he should be denounced ~~accused~~ as an arrogant innovator, and an inventor of heresies against Popery! The entreaty of Servetus for a more merciful mode of death (for which, to his credit be it said, Calvin also pleaded) was in vain. The procession at once formed to the place of execution.

Nothing in his life, it may be said, became him like the leaving of it. ~~And~~ As Guizot remarks, "The dignity of the philosopher triumphed over the weakness of the man, and Servetus died heroically and calmly at that stake, the very thought of which had at first filled him with terror".

There will be dedicated ~~in a few days~~ shortly on August 13th, at Vienne, a monument commemorating the services of Servetus as an independent spirit in theology, and as a pioneer in physiology. It has been said that Sapho survives because we sing her songs, and Aeschylus because we read his plays, but it would be difficult to explain the wide-

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spread interest in Servetus from any knowledge men have of his writings. The pathos of his fate, which scandalized Gibbon more profoundly than all the human heccatombs of Spain or Portugal, accounts for it in part. Then there is the limited circle of those who regard him as a martyr to the Unitarian confession; while scientific men have a very definite interest in him as one of the first to make a substantial contribution to ~~the true~~ our knowledge of the circul--ation of the blood. His theological and physiological views call for brief comments.

IV

Next to theology itself the study of medicine has been a great heresy breeder. From the days of Arnold of Villanova and Pierre of Abano, there have been noted heretics in our ranks. Bossuet defines a heretic as "One who ~~has~~ opinions". Servetus seems to have been charged with ~~heretics~~ opinions like a Leyden jar. His most notable ones concerned the Trinity and Infant Baptism. Wracked almost to distruction in the third and fourth centuries on the subject of the Trinity, the final conquest of Arianism found its expression in that megnificent ~~te~~ human document the Athanasian Creed, with which the Catholic church has forever settled the question, in language which sends a cold shudder down the backs of heretics. But there have always been turbulent souls who could not rest satisfied, and who would bring up unpleasant points from the Bible -- men who were not able to accept Dante's wise advice: -- "Mad is he who hopes that our reason can traverse the infinite way

which

Restitutio'. Mainly concerned with most abstruse questions concerning the Trinity and Infant Baptism, it is a most difficult ~~thing~~ work to read, and, as theologicians confess, a still more difficult ~~one thing~~ to understand. Professor Emerton in his article from which I have already quoted gives in a few paragraphs the essence of ~~the~~ his ~~work~~ views. "He finds the central fact of Christian speculation, not in

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the doctrine of the Trinity as formulated by the schools, but in the fact of the divine incarnation in the person of Jesus. He admits the divine birth, explaining it as in harmony with a general law of divine manifestation whereby the spiritual is revealed in the material. He would not accept the idea of an eternal sonship, except in this sense that the divine Word, the Logos, had always

which one Substance as Three Persons holds. Be content oh human race with the Quia".

The doctrine has been a great breeding ground of heretics, the smoke of whose burning has been a sweet savour in the nostrils alike of Catholics and Protestants. Even today, so deeply engrain-ed is the Catholic Creed, ~~that~~ nearly everything in the way of doctrinal ~~vagary~~ is forgiven ~~to a man~~, save denial of the Trinity, which is ~~usually~~ thought to put a man outside the pale of normal Christianity. If this is the feeling today, imagine what it must have been in the middle of the 16th century !

Servetus wrote two theological works -- 'de Trinitatis errori-ibus', published in 1531, followed by a supplement in 1532. To these I have already referred. Living a double life at Vienne, to the inhabitants he was the careful and kind practitioner of medicine, to whom they had become devoted, ~~and~~ but all the while, nourishing the dream of his youth, he had in preparation ~~the~~ a work which ~~was to~~ he believed would win the world to Christ by purifying the church from ~~what he believed to be~~ grave errors in doctrine.

I have already spoken of the printing of the 'Christianismi Restitutio'. Mainly concerned with most abstruse questions concerning the Trinity and Infant Baptism, it is a most difficult ~~thing~~ work to read, and, as theologicians confess, a still more difficult ~~thing~~ one to understand. Professor Emerton in his article from which I have already quoted gives in a few paragraphs the essence of ~~the~~ his ~~work~~ views. "He finds the central fact of Christian speculation, not in the

the doctrine of the Trinity as formulated by the schools, but in the fact of the divine incarnation in the person of Jesus. He admits the divine birth, explaining it as in harmony with a general law of divine manifestation whereby the spiritual is revealed in the material. He would not accept the idea of an eternal sonship, except in this sense, that the divine Word, the Logos, had always been active as the expression in outward form of the divine activity. So, in the fulness of time, this same Logos produced a being from a human mother upon whom at the moment of his birth the divine Spirit was breathed. Obviously this is not the 'eternal Son' of the creeds, and herein lay the special theological crime of Servetus. In his criticism of the church order, of the papal government, of the sacramental system, he does not differ essentially from the more radical of the reformers. On the essential matters of baptism and the Eucharist he goes quite beyond the established reforming churches. In both cases he invokes the principle of plain reason. He rejects Infant Baptism on the ground that the infant can have no faith, and that the practice is therefore mere incantation. He denies transsubstantiation on the rational basis that substances and accidents may not be separated, and does not spare the reformong leaders for what seemed to him their half-hearted attitude on this point. His language throughout is harsh and violent, except where, as at the close of his chapters, he passes over into the forms of devotion and closes his diatribes with prayers of great beauty and spirituality". ~~(Emerton)~~

~~Unquestionably~~ nobly so. Judged by the age Servetus was a rank heretic, and as deserving of death as any ever tied to a stake. We can scarcely call him a martyr of the church -- What church would own him ? All the same we ~~know~~ honor his memory as a martyr to the truth as he saw it.

We

~~We have seen that~~ Servetus was a student of medicine in Paris with Sylvius and Guinther, two of the most ardent of the revivers of the Galenic anatomy. More important still, he was a fellow student~~,~~ and pro-sector with Versalius. He wrote one little medical book of no special merit. The works which he

~~Unquestionably~~ It was there ~~is~~ was only one safe ~~and sure~~ way of dealing with heresy, ~~As~~ The Christian church early found out. From the end of the fourth century, when the habit began, to its climax on St.Bartholomew's day, it was universally recognized that only ~~the~~ dead heretics ceased to be troublesome. History affords ample evidence of the efficacy of ~~the~~ repressive measures, often carried out on a scale of noble proportions. France is Catholic because of a root and branch policy; England's Protestantism is an enduring testimony to the thoroughness with which Henry Viii carried out his measures ~~a policy of exterm nation.~~ As de Foe says ~~points out~~ in his famous pamphlet, "Shortest way with Dissenters", if a man is obstinate and persists in having an opinion of his own, contrary to that held by a majority of his fellows, and if the opinion is pernicious and jeopardizes his Eternal Salvation, it is much safer to burn him than to allow his doctrines to spread!

~~This was our policy~~ For 1,200 years, this policy ~~and it~~ kept heresy within narrow limits until the great outbreak. The very best men of the day were consenting to the death of heretics, ~~Undoubtedly~~ The spirit of Protestantism was against it; Luther nobly so. Judged by ~~the~~ his age Servetus was a rank heretic, and as deserving of death as any ever tied to a stake. We can scarcely call him a martyr of the church -- What church would own him ? All the same we ~~know~~ honor his memory as a martyr to the truth as he saw it.

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~~Servetus came into~~ In possession of a fact in physiology of the very first moment, ~~the circumstances of which he~~ Servetus described it ~~and~~ with & truthfulness clearness and accuracy. But so little did he think of this discov--ery, of so trifling importance did it appear in comparison with the great task in hand of restoring Christianity, that he used it simply as an illustration ~~in one of his~~ when discussing on the nature of the Holy Spirit in his work Christianismi Restitutio.

The discovery was nothing less than that of the passage of the blood from the right side of the heart to the left through the lungs, what is known as pulmonary or lesser circulation.

In the year 1553 the views of Galen everywhere prevailed. The ~~He had worked at the physiology of the circulation~~ great master had indeed effected a revol--ution in the knowledge of the circulation ~~a revolution indeed~~ almost as great as that ~~effected~~ made by Harvey in the 17th century.

Briefly stated there were two bloods, the natural and the vital, in two practically closed systems, the veins and the arteries.

The

laft side of the heart; but the chief communication between the two systems was through the pores in ventricular septum, the thick muscular wall separating the two chief chambers of the heart.

4 Valves

The literature may be searched in vain for any other than the Galenic view up to ~~the date~~ 1553. Even Versalius, who could not understand from its structure how even the smallest quantity of blood could pass through the septum, dividing the ventricle offered no other explanation.

The

The more one ~~considers~~ Knows of the Galenic physiology, the less one is surprised that it had so captivated the minds of men. The description of the new way which Servetus ~~gives~~ describes is found in the 5th book of the 'Christianismi Restitutio', in which he is discussing the nature of the Holy Spirit. ~~spirits, and he describes~~ After mentioning the three-fold spirit of the body of man, natural, vital and animal, ~~and then~~ he goes on to discuss the

The liver was the central organ of the venous system ~~form which~~ the 'shop' as Burton calls it to which its Chylus was converted into blood and from which it was distributed by ~~the blood passed out in~~ the veins to all parts of the body for nourishment. The veins were rather vessels containing the blood than tubes for ~~the~~ transmission -- irrigating canals Galen called them. ~~The arteries also contained blood, but of a thinner kind, brighter in colour and mixed with the vital spirits. Through this system the vital heat was distributed to all parts of the body, and its vessels were distinguished by a throbbing or beating, known as the pulse.~~

Galen knew the structure of the heart, the arrangement of its valves, and the direction in which the blood passed, but its chief function was not as we suppose, mechanical, but in ~~it, especially in~~ the seat of life the left ventricle, the vital spirits were generated, being a mixture of inspired air and blood. By an alternate movement of dilatation and collapse of the ~~blood~~ arteries the blood with the vital spirits were kept in constant ~~to-and-fro~~ motion. (1) Galen had demonstrated that the arteries and the veins communicated with each other at the periphery. ~~He believed also that~~ a small quantity of the blood went he believed from the right side of the heart to the lungs, for their nourishment, and in this way passed to the laft side of the heart; but the chief communication between the two systems was through the ventricular septum, the thick muscular wall separating the two chief chambers of the heart.

The literature may be searched in vain for any other than the Galenic view up to ~~the date~~ 1553. Even Vesalius, who could not understand from its structure, how even the smallest quantity of blood could pass through the septum, dividing the ventricles offered no other explanation.

(1) So firmly established was the Galenic physiology that the new views of Harvey made on the circulation of the blood were received with incredulity and opposition. The following extract from Riolanus' Anthropographia will serve as a typical example of the reception accorded to the discovery:- "The blood is not carried through the pulmonary vein to the left ventricle of the heart, but flows through the pores of the septum. The pulmonary artery is not dilated with blood for the use of the lungs, but only with air. The pulmonary vein is not filled with blood for the use of the heart, but only with air. The left ventricle of the heart is not filled with blood, but with spirits. The arteries are not filled with blood, but with air. The veins are not filled with air, but with blood. The left auricle of the heart is not filled with blood, but with air. The left ventricle of the heart is

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The more one ~~considers~~ Knows of the Galenic physiology, the less one is surprised that it had so captivated the minds of men. The descrip-
-tion of the new way which Servetus ~~gives~~ describes is found in the 5th book of the 'Christianismi Restitutio', in which he is discussing the nature of the Holy Spirit. ~~spirits, and he describes~~ After mentioning the three-fold spirit of the body of man, natural, vital and animal, ~~and then~~ he goes on to discuss the vital spirit, and in a few paragraphs describes the pul inory circulation. "Rightly to understand the question here, the first thing to be considered is the substantial generation of the vital spirit -- a compound of the inspired air with the most subtle portion of the blood. The vital spirit, has therefore, its souree in the left ventricle of the heart, the lungs aiding most essent-
-ially in its production. It is a fine attenuated spirit, elaborated by the power of heat. of a crimson colour and fiery potency -- the lucid vapour as it were of the blood, substantially composed of water, air, and fire; for it is engendered, as said, by the mingling of the inspired air with the more subtle portion of the blood which the right ventricle of the heart communicates to the left. This communication, however, does not take place through the septum, partition or midwall of the heart, as commonly believed, but by another admirable contrivance, the blood being transmitted from the pulmonary artery to the pulmonary vein, by a lengthened passage through the lungs, in the course of which itis elaborated and becomes of a crimson colour. Mingled with the inspired air in this passage, and freed from fuliginous vapours by the act of expiration, the mixture being nw complete in every respect

any vein."

"It is in the lungs, consequently, that the mixture (of the inspired air with the blood) takes place, and it is in the lungs also, not in the heart, that the crimson colour of the blood is acquired. There is not indeed capacity of room enough in the left ventricle of the heart for so great and important an elaboration, neither does it seem compotent to produce the crimson colour. To conclude, the septum or middle portion of the heart, seeing that it

it is without vessels and special properties, is not fitted to permit and accomplish the communication and elaboration in questin, although it may be that some transudation takes place through it. It is by a mechanism similar to that by which the transfusion from the vena portae to the vena cava takes plave in the liver, in respect

respect, and the blood become fit dwelling-place of the vital spirit, it is finally attracted by the diastole, and reaches the left ventricle of the heart."

"Now that the communication and elaboration take place in the lungs in the manner described, we are assured by the conjunct--ions and communications of the pulmonary artery with the pulmonary vein. The great size of the pulmonary artery seems of itself to declare how the matter stands; for this vessel would neither have been of such a size as it is, nor would such a force of the purest blood have been sent through it to the lungs for their nutrition only; neither would the heart have supplied the lungs in such fashion seeinf as we do that the lungs in the foetus are nourished from an--other source.--those membranes or valves of the heart not coming into play until the hour of birth, as Galen teaches. The blood must consequently be poured in such large measure at the moment of birth form the heart to the lungs for another purpose than the nourishment of these organs. Moreover it is not simply air, but air mingled with blood that is returned from the lungs to the heart by the pulmon-ary veins."

"It is in the lungs, consequently, that the mixture (of the inspired air with the blood) takes place, and it is in the lungs also, not in the heart, that the crimson colour of the blood is acquired. There is not indeed capacity of room enough in the left ventricle of the heart for so great and important an elaboration, neither does it seem compotent to produce the crimson colour. To conclude, the septum or middle portion of the heart, seeing that

it

it is without vessels and special properties, is not fitted to permit and accomplish the communication and elaboration in questin, although it may be that some transudation takes place through it. It is by a mechanism similar to that by which the transfusion from the vena portae to the vena cava takes plawe in the liver, in respect of the blood, that the transfusion from the pulmonary artery to the pulmonary vein takes place in the lungs, in respect of the spirit." (Willis' translation). I here reproduce from the Vienna example the two pages from which the greater part of this description is taken (Fig).

The important elements ~~in this statement~~ here are: --First, the clear ~~recognition~~ statement of the function of the pulmonary artery; secondly the transmission of the impure or venous blood through the lungs from the right side of the heart to the left; thirdly, the recognition of an elaboration or transformation in the lungs, so that with the freeing ~~of~~ the blood ~~from~~ of 'fuliginous vapours', there ~~is~~ was at the same time a change to the crimson colour of the arterial blood; fourthly, the direct denial of a communication ~~between the two systems and~~ of the two bloods, by means of orifices in the septum between the ventricles

~~Servetus~~ He had no idea of the general or systematic circul-ation, and so far as the left heart and the arteries were concerned he believed them to be the seat of the vital blood and spirits.

It is not hard to imagine how Servetus had become emancip-ated from the ~~Galenical~~ old views. ~~He was~~ A student at Paris at ~~the~~ a most opportune period, when dissection had become popular, ~~and~~ ~~when~~ he had had as pro-sector to Guinther, exceptional opportunities. But more important still, he had as fellow-~~pro-sector~~ worker the anatomical ~~an~~ arch-heretic

far-fetched view has been maintained that Italian students of Paris had acquainted Servetus with the views of Columbo.

(1.) William Wotton, 'Reflections upon ancient and modern learning' 1697, page 229.

(2) De re anatomica Venetiis

It is claimed for ~~him~~ Columbo also that he had a better idea, ~~Han Servetus~~ of the function of respiration in the purification of the blood, by ~~the~~ no mingling with the air, but Servetus distinctly states that the mixture takes place in the lungs, not as was usually understood at the time, in the heart itself. (1569)

heretic, Andreas Vesalius, ~~touched~~ imbued already with the conviction that his teachers were wrong in regarding Galen as inspired and infallible. It was at this very period that Vesalius had pointed out to his teacher Sylvius the error of Galen about the aortic valves; and when one considers the extraordinary rapidity with which Vesalius reformed ~~the~~ human anatomy, before he had completed his 28th year, it is not surprising that his colleague and co-worker should have discovered one of the great ~~fundamental~~ truths of physiology.

The 'Christianismi Restitutio' was never published, and the discovery of Servetus remained unrecognized until the attention of Wotton was called to it by Charles Bernard, a St.Bartholomew Hospital surgeon. (1.) Meanwhile it had been rediscovered, and among the many vagaries with which the history of the circulation of the blood is marked, not the least striking is the attempt to rob Servetus of his credit.

In 1559 there was published a work by Realdus Columbus, (2) a student of Vesalius, ~~a brilliant anatomist~~ and his successor ~~in the chair of anatomy~~ at Padua, in which the circulation of the blood from the right side of the heart to the left is clearly described. It is impossible to say that he had added anything to the account ~~by Servetus~~ just given, and the far-fetched view has been maintained that Italian students of Paris had acquainted Servetus with the views of Columbo.

(1.) William Wotton,
'Reflections upon ancient and modern learning'
1697, page 229.

(2) De re anatomica Venetiis

It is claimed for ~~him~~ Colombo also that he had a better ~~idea~~ than Servetus, of the function of respiration in the purification of the blood, by ~~the~~ the mingling with the air, but Servetus distinctly states that the mixture takes place in the lungs, not as was usually understood at the time, in the heart itself.

Caesalpinus, (1569) for whom ~~also~~ elaborate claims are made, also knew of the ~~circulation of the blood through the veins~~ pulmonary circulation but he ~~lungs, very much however, as in the Galenical manner, as~~ he thought part of the blood ~~it~~ went through the ~~median~~ septum. A more important claim is made for him of the discovery of the general circulation, but it is remarkable ~~seems~~ that anyone knowing the history of the subject could ~~believe that he had~~ read into his physiology anything more than the old Galenical views.

~~But~~ The history of the circulation bristles with controversy, and widely divurgent opinions are held as to the ~~comparative~~ merits of the different observers. That Servetus first advanced a step beyond Galen, that Colombo and Caesalpinus ~~had~~ reached the same conclusion, independently all three recognizing the lesser circulation, is quite as certain as ~~definite~~ as that it remained for Harvey to open an entirely new chapter in ~~the history of~~ physiology, and to introduce ~~for the first time, and to demonstrate by~~ a new by which modern experimental methods the complete circulation of the blood was first clearly demonstrated (1)

A word about the book 'Christianismi Restitutio, liber inter rariores longe rarissimus', ~~So far as we know~~ only two complete copies are known, one in the Bibliotheque Nationale, Paris, and the other in

(1) John C. Dalton's History of the Circulation, 1884 gives by far the best & fullest account of the whole subject in English the

Laboulbene, and ~~Mr.~~ Hahn, the distinguished librarian of the Paris Faculty of Medicine, both of whom are in favour of fire not moisture as the cause of the staining

In 1791 the Vienne copy was reprinted at Nuremberg in facsimile, page for page, ~~but~~ both Dr.de Murr, who was responsible for the reprint very wisely put the date 1791 at the bottom of the last page. Copies of this edition are not uncommon in the large libraries. Mead attempted to have a reprint made from his copy in 1723, but ~~after having it~~ when nearly completed

completed, the Bishop of London had it suppressed, and (it is stated) ~~that~~ the copies were burnt. A few ~~copies~~ however escaped, and Willis ~~states~~ says that ~~there is~~ he saw one in the library of the London Medical Society. I regret to say that the librarian informs me that this no longer is to be found. A copy of the Mead partial reprint is in the Bibliotheque Nationale, and two copies are in the British Museum

the Imperial Library, Vienna, from I was very kindly permitted to ~~take~~ have the photographs of the title-page, and the pages describing the circulation of the blood which are here reproduced. A third copy, imperfect, with the first sixteen pages in MS, is in the University Library, Edinburgh. The Paris copy is of special interest, as it belonged to Dr. Richard Mead, the distinguished physician and book collector, by whom it was exchanged with M.de Boze for a series of medals. In 1784 it was secured for the Royal Library. It may now be seen in one of the show cases of the Bibliotheque Nationale, of which it is one of the ~~special~~ rare treasures. ~~But what adds greatly to the~~ An added interest is the fact that on the title-page occurs the name 'Germain Colladon', the Geneva barrister, who prosecuted Servetus; and it is in the highest degree probable that this was the identical copy used at the trial. In one place the book is stained, some suppose by moisture, others think it possible this was the very copy bound upon the victim himself, and snatched from the flames by some--one who wished to preserve so interesting a record of the great heretic.

The question has been examined carefully by ~~the~~ The late Professor Laboulbene, and M~~onsieur~~ Hahn, the distinguished librarian of the Paris Faculty of Medicine, both of whom are in favour of fire not moisture as the cause of the staining

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A last word on the attitude of John Calvin towards Servetus. Much scorn has been heaped upon the great reformer, and one cannot but regret that a man of such magnificent achievements, should have been dragged into a miserable heresy hunt like a common inquis-itor. Let us not estimate him by his century, as his friends plead, but frankly by his life, and as a man of like passions with ourselves. He had bitter provocation, flouted for years by the persistent assaults of Servetus, and shocked out of all compassion by his blasphemies, is it to be wondered that the old Adam got the better of his christian charity ? Not only is it impossible to acquit Calvin of active complicity in this unhappy affair, but there was mixed up with it a personal hate, a vindictiveness unbecoming in so great a character, and we may say foreign to it. But let the long record of a self-denying life, devoted in an evil generation to the highest and the best, wipe for all reasonable men this one blot. Let us, if we may judge him at all, do so as a man, not a a demi-god. We cannot defend him, let us not condemn him; let his one grievous fault, even though we may fear he never repented of it, be the shadow which throws into stronger relief the splendid outlines of a noble life. In his defence,(1) the original

(1) Defensio Orthodoxae &c 153-4 edition

race "whose heroic sufferings", as Carlyle says, "rise up melodiously together to heaven out of all lands and out of all Time, as a sacred Miserere, their heroic actions also as a boundless everlasting Psalm of Triumph".

The erection this month at Vienne of a quater-centenary monument completes the recognition by the modern world of the merits of one of the strangest figures on the rich canvas of the 16th century. The wandering Spanish scholar, the stormy disputant, the anatomical prosector, the mystic dreamer of restored Christianity, the discoverer of one of the fundamental facts of physiology has come at last to his own. There are those, I know, who feel that perhaps more than justice has been done; but in a tragic age Servetus played an unusually tragic part, and the pathos of his fate appeals strongly to us

Note . The Servetus bibliography is fully given to 1890 in Professor A.V.D.Linde's Michael Servetus, Groningen. 1891 My personal interest dates many years back when Pastor Tollin's delightful sketches enlivened the numbers of Virchow's Archives. No one

edition of which I have here, which is concerned largely with doctrinal questions, ~~and~~ not only are there no expressions of regret for the part he played in the tragedy, but the work is filled with insults to his dead enemy, couched in the most vindictive, ~~and even foul~~ language. On the spot where ~~Se~~ Servetus was burnt there stands today an expiatory monument, (Fig) which expresses the spirit of modern Protestantism. On one side is the record of ~~the guilt and~~ his birth and death ~~of Servetus,~~ on the other ~~the~~ an inscription, of which the following is a translation "Duteous and grateful foll-owers of Calvin, our great Reformer, yet condemning an error which was that of his age, and strongly attached to liberty of conscience according to the true principles of the Reformation and the Gospel, we have erected this expiatory monument." (Oct.27, 1903.).

There too are days of retribution, of the restoration of all things, the days of the opening of the 5th seal, when the souls under the altar see their blood avenged, when we clothe in the white robes of charity those who were slain for the testimony which they held, Little ~~do we~~ not ~~now-a-days~~ whether the Martyr ~~he~~ was Catholic or Protestant, caring only to honour, ~~as in the case of Servetus,~~ one of that great company which no man can number, ~~the elect of the race~~ "whose heroic sufferings", as Carlyle says, "rise up melodiously together to heaven out of all lands and out of all Time, as a sacred Miserere, their heroic actions also as a boundless everlasting Psalm of Triumph".

The erection this month at Vienne of a quater-centenary ~~magnificent~~ monument completes the recognition by the modern world of the merits of one of the strangest figures in the rich canvass of the 16th century. The wandering Spanish scholar, the stormy disputant, the anatomical prosector, the mystic dreamer of restored Christianity, the discoverer of one of the fundamental facts of physiology has come at last to his own. There are those, I know, who feel that perhaps more than justice has been done; but in a tragic age Servetus played an unusually tragic part, and the pathos of his fate appeals strongly to us

Note . The Servetus bibliography is fully given to 1890 in Professor A.V.D.Linde's Michael Servetus, Groningen. 1891 My personal interest dates many years back when Pastor Tollin's delightful sketches enlivened the numbers of Virchow's Archives. No one has ever had a more enthusiastic biographer, and to the writings of the Madgeburg clergyman we owe the greater part of our modern knowledge of Servetus. The best account in English is by Willis — "Servetus and Calvin" 1877. A German translation of the "Christianismi Restitutio" by Dr.Bernhard Spiess appeared in 1895, (2nd edition, Wiesbaden, Chr. Limbarth). I am indebted to Professor Harper of Princeton for an historical drama 'The Reformer of Geneva' , byProfessor Shields, (privately printed, Princeton University Press 1897) which gives an admirable picture of ~~the period~~ Geneva at the time of the trial. From Chéreau's Histoire d'un Livre 1879, ~~he~~ I have 'cribbed' the idea of the introduction. The name of Mosheim must be mentioned, as his writings were for years the common tap from which all Servetus knowledge was derived. The Servetus portrait, of which Mosheim speaks, has disappeared; I have reproduced ~~here~~ the engraving from Allwordens Historia (1727) , also the Roch ~~monument~~ statue at Anamnesa, and the ~~recently~~ ~~Spiess~~ monument erected at Vienne in August 14th last.

few minutes. I was enchanted with the view as we came up the river.
and he urged me to continue my studies. It is more difficult to get bodies
Point me out those interesting old ruins.

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OCT 2010

Order
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#7664, iv, fol. 46-

Andreas Vesalius and Michel Servetus,
an imaginary dialogue,
Vienne, 1542.

V. Michel! It must be! But what do you here? Where have you been these years? I have asked for you often from travellers and students, but always the same answer - no word since his sudden departure from Paris after the contest with the Faculty.

S. But you, Andreas - I'm quite as astonished - what brings you here? And just the same - so fresh and bright and gay! It does my heart good to see you.

V. I am on my way to Basel with a precious load. But tell me what brings you here?

S. I have lived in this town for three years. You remember the companion who befriended me so warmly at the trial, Paumier the youthful prelate, even then Archbishop of Vienne and primate of all France? When the [adverse?] decision of the Parliament was given and I could no longer support myself by lecturing on astrology, I had to return to my old work with the printers and at Chartres [for Lyons?] I began practice and at the same time undertook several works for my old friends, the Trechsels. But I had not been there many months before Paumier sought me and offered me a place in his household as physician, with liberty to practise and to pursue my studies. Come to the palace. We will leave word with the porters to bring your boxes.

V. Let us halt, Michael, at this lovely spot that I may look about for a few minutes. I was enchanted with the view as we came up the river. Point me out those interesting old ruins.

Andrea Vesalius and Michel Servetus,
an imaginary dialogue,
Vienne, 1545.

V. Michel: If must be; But why do you here? Where have you been these
years? I have asked for you often from travellers and strangers, but
always the same answer - no word since his sudden departure from Paris
after the contest with the Faculty.

S. But you, Andrea - I'm quite as astonished - what brings you here? And
just the same - so tired and pitiful and ugly! It goes ill with you to
be practise and to blame my studies. Come to the palace. We will
leave world with the portals to bring your boxes.

V. Let us half, Michael, at this lovely shop that I was look about for a
few minutes. I was enchanted with the view as we came up the river.
Point me out those interesting old ruins.

S. I have lived in this town for three years. You remember the companion
you here?

V. I am on my way to Basel with a precious load. But tell me what brings
see you.

Just the same - so tired and pitiful and ugly! If goes my heart good to

Andrea, 1545.
Vienne,
#3084, iv, fol. 45-

S. [2 inches blank]

V. What charming rooms you have and such a view! What a contrast to our old quarters in the rue [blank]! And books everywhere! Ah, that table! You must have a great work in progress! How delighted I am to feel free at last after five years of incessant toil! But are you sure you gave the men directions where to bring the boxes? I could not sleep a wink if I had not my precious burden near at hand, and I must show you this evening my magnum opus. Michael, I have -- but we have much to speak of before I can speak of it. Tell me about your life, what do you do? Do you keep up your anatomical studies? Or have you wandered off again to your favourite theology? What (whispering)would the good Archbishop say if he knew that Villeneuve, the author of that [blank] was his physician?

S. Hsh! for Heaven's sake! I have myself forgotten my identity. Not a soul suspects that I am Villeneuve. Andernach and you alone know my secret.

And now, Andreas, tell me about yourself and your work. Do you remember that day in Paris when Andernach found us disputing with Charles Estienne about the relation of the vena porta and the inferior cava? After your demonstration Andernach, his face beaming with pride, turned to us and said, "Here is our young master. We have seen nothing like this in the school."

V. Shortly after you left Paris I returned to Louvain and spent sometime with my family. My father had been ill - he is apothecary, you remember, to [the Emperor] - and there were many things to be arranged. My little Paraphrase on Rhazes, which I published in 1537, gave him great pleasure and he urged me to continue my studies. It is more difficult to get bodies

and now, Andrea, fell me about yourself and your work. Do you remember that day in Paris when Andersch found us disputing with Charles Eastman about the definition of the word poetry and the interior chair? After your demonstration Andersch, his face beaming with pride, turned to us and said, "Here is our young master. We have seen nothing like this in the school."

V. Shortly after you left Paris I returned to London and spent sometime with my family. My father had been ill - he is absolutely, you remember, the Emperor - and there were many things to be arranged. My little Terentrase on Kansas, which I baptised in 1937, gave him great pleasure and he urged me to continue my efforts. It is more difficult to get people

S. Hah; for Heaven's sake; I have myself (forgotten my identity. Not a soul expects that I am Villeneuve. Andersch and you alone know my secret.

V. What charming rooms you have and such a view; What a contrast to the old dreariness in the Rue Campagne; And books everywhere; Ah, that feeling; You must have a great work in progress; How delighted I am to feel free of last after five years of incessant toil; But are you sure you give the men directions where to print the boxes; I could not sleep a wink if I had not my pictures pinned near at hand, and I must show you this evening my magnum opus. Michael, I have -- but we have much to speak of before I can speak of it. Tell me about your life, what do you do? Do you keep up your anatomical studies; Or have you abandoned all again to your Terpsichorean philosophy; What (mysterious)world the good Archipelago was it he knew that Villeneuve the author of that (blank) saw his physician;

S. Ha; for Heaven's sake; I have myself (forgotten my identity. Not a soul expects that I am Villeneuve. Andersch and you alone know my secret.

V. What charming rooms you have and such a view; What a contrast to the old dreariness in the Rue Campagne; And books everywhere; Ah, that feeling; You must have a great work in progress; How delighted I am to feel free of last after five years of incessant toil; But are you sure you give the men directions where to print the boxes; I could not sleep a wink if I had not my pictures pinned near at hand, and I must show you this evening my magnum opus. Michael, I have -- but we have much to speak of before I can speak of it. Tell me about your life, what do you do? Do you keep up your anatomical studies; Or have you abandoned all again to your Terpsichorean philosophy; What (mysterious)world the good Archipelago was it he knew that Villeneuve the author of that (blank) saw his physician;

S. (a index blank)

in Louvain than in Paris, and I nearly got into serious trouble over a skeleton.

S. Your old game, Andreas! How you escaped in Paris was always a marvel to us.

V. One day my father said,"Andreas, why not go to Italy, where even when I was a student the advantages were great? I have friends in all the schools and we can have letters of introduction from the Court. There are many Flemings in Venice and Bologna, and there will be some advantage perhaps in taking a degree from Bologna or Padua."

Ends. [rest lacking.]

Frankie a degree from Bologna or Padua."

Made. Great jacking.

7. One day we [illegible] "Mateese, why not go to Italy, where even men I was a student the advantages were great? I have friends in all the schools and we can have letters of introduction from the Cont. There are many Flemings in Venice and Bologna, and there will be some advantage perhaps in

6. Your old name, Mateese; How you escaped in Paris was always a mystery to us.

skeleton.

5. In Louvain then in Paris, and I nearly got into serious trouble over a

#7664, iv, fol. 46-

Andreas Vesalius and Michel Servetus,
an imaginary dialogue,
Vienne, 1542.

V. Michel! It must be! But what do you here? Where have you been these years? I have asked for you often from travellers and students, but always the same answer - no word since his sudden departure from Paris after the contest with the Faculty.

S. But you, Andreas - I'm quite as astonished - what brings you here? And just the same - so fresh and bright and gay! It does my heart good to see you.

V. I am on my way to Basel with a precious load. But tell me what brings you here?

S. I have lived in this town for three years. You remember the companion who befriended me so warmly at the trial, Paumier the youthful prelate, even then Archbishop of Vienne and primate of all France? When the [adverse?] decision of the Parliament was given and I could no longer support myself by lecturing on astrology, I had to return to my old work with the printers and at Chartres [for Lyons?] I began practice and at the same time undertook several works for my old friends, the Trechsels. But I had not been there many months before Paumier sought me and offered me a place in his household as physician, with liberty to practise and to pursue my studies. Come to the palace. We will leave word with the porters to bring your boxes.

V. Let us halt, Michael, at this lovely spot that I may look about for a few minutes. I was enchanted with the view as we came up the river. Point me out those interesting old ruins.

Madame Vessilne and Michael Servoff,
au Imagination Dialogue,
Avenue, Lads.

V. Michael! It must be; but what do you mean? Where have you been these
V. years? I have asked for you often from Travellers and afraid, but
always the same answer - no word since his sudden departure from Paris
after the conflagt with the Faculty.

S. Yes, you, Madame - Madame as mentioned - what brings you here?
And just the same - as fresh and bright and gay; If ever we need to
see you.

V. I am on my way to Basel with a Proctor bond. But fell me what brings
you here?

S. I have lived in this town for three years. You remember the combination
who petitioned me so warmly at the trial, Pannier the Constitutional Prelate,
even when attached to Avenue and Primate of all France? When the
Revolution of the Parliament saw fit and I could no longer
support myself by lecturing on Esthetics, I had to return to my old
work with the Printers and at Chartres (not Lyons). I began practice
and at the same time sought for Literary work for my old friends, the
Encyclopedia. But I had not been there many months before Pannier sought
me and offered me a place in his household as physician, with little
to practise and to barter my efforts. Come do the balance. We will
leave work with the portals to print your poems.

V. Let us half, Michael, at this lovely spot that I may look upon it for a
few minutes. I was enchanted with the view as we came up the river.
Point me out those interesting old ruins.

S. [2 inches blank]

V. What charming rooms you have and such a view! What a contrast to our old quarters in the rue [blank]! And books everywhere! Ah, that table! You must have a great work in progress! How delighted I am to feel free at last after five years of incessant toil! But are you sure you gave the men directions where to bring the boxes? I could not sleep a wink if I had not my precious burden near at hand, and I must show you this evening my magnum opus. Michael, I have -- but we have much to speak of before I can speak of it. Tell me about your life, what do you do? Do you keep up your anatomical studies? Or have you wandered off again to your favourite theology? What (whispering) would the good Archbishop say if he knew that Villeneuve, the author of that [blank] was his physician?

S. Hsh! for Heaven's sake! I have myself forgotten my identity. Not a soul suspects that I am Villeneuve. Andernach and you alone know my secret.

And now, Andreas, tell me about yourself and your work. Do you remember that day in Paris when Andernach found us disputing with Charles Estienne about the relation of the vena porta and the inferior cava? After your demonstration Andernach, his face beaming with pride, turned to us and said, "Here is our young master. We have seen nothing like this in the school."

V. Shortly after you left Paris I returned to Louvain and spent some time with my family. My father had been ill - he is apothecary, you remember, to [the Emperor] - and there were many things to be arranged. My little Paraphrase on Rhazes, which I published in 1537, gave him great pleasure and he urged me to continue my studies. It is more difficult to get bodies

8. Is indeed blank?

V. What charming rooms you have and such a view! What a comfort to not
   die during the run blank; and books everywhere; Ah, that fabled
   old drawers in the run blank; Hom delighted I am to feel free
   you must have a great work in progress; How delighted I am to feel free
   at least fifty five years of successful full; but as you sure you says the
   men directions when to print the boxes? I could not sleep a wink if I
   had not my precious pulpen near at hand, and I must show you this evening
   my museum piece. Michael, I have -- but we have much to speak of before
   I can speak of it. Tell me about your life, what do you do? Do you
   keep up your academical studies? Or have you abandoned all ideas to your
   (whatever)worship's profession? What (whatever)worship that good fairy
   knew that (whatever) the author of that blank saw his physician?
8. Hah; for Norman's sake; I have myself forgotten my identity. Not a
   soul suspects that I am (whatever). Nadermann but you alone know my
   secret.

   Not a word, madress, fell me about yourself and your work. Do you remember
   this evening we walked in Carlos Pastures discussing with Charles Pastenne
   about the relation of the new born baby and the inspirit dream? After you
   demonstration machine, his face beaming with pride, turned to us and
   said, "Here is our young master. We have seen nothing like this in the
   school."

V. Shortly after you left Paris I returned to London and spent sometime with
   my family. My father had seen it all - he is unfortunately, now remembered, to
   the (whatever) - and that's more many friends to be attended. My little
   one empire - had grown a fine young girl in 1931, very like her grandmother
   on Mother's side, which I hoped in 1937, even his step brother
   and he united me to continue my studies. It is more difficult to say poetry

in Louvain than in Paris, and I nearly got into serious trouble over a skeleton.

S. Your old game, Andreas! How you escaped in Paris was always a marvel to us.

V. One day my father said,"Andreas, why not go to Italy, where even when I was a student the advantages were great? I have friends in all the schools and we can have letters of introduction from the Court. There are many Flemings in Venice and Bologna, and there will be some advantage perhaps in taking a degree from Bologna or Padua."

7. One day we [illegible] said, "Madame, why not go to Italy, where even when I was a student the advantages were great? I have friends in all the schools and we can have letters of introduction from the Comt. There are many Flemings in Venice and Bologna, and there will be some advantage perhaps in having a letter from Bologna or Padua."

8. Your old home, Madame; How you escaped in Paris was always a mystery to us.

9. In the evening when in Paris, and I nearly got into several tremendous skeleton.

Material for

Andreas Vesal and Michael Servet

An Imaginary① Conversation②

Vienna 1542

[never published but inserted here to be close to "Michael Servetus"]

① "Imaginary" written over [?]

(2) "Conversation" written over "Dialogue."

Innsbruck. I was enchanted with the view as I came up the river. Point me out - there interesting ruins.

at a charming rooms you have! -
d such a view! what a contrast to our

Andreas Vesal & Michel Servet
an imaginary Conversation
Vienne 15.42

Michel! what is it must be - but what do you here.
where have you been these years. I have expected to
V. hear was a happy circumstance that
you flew from travellers & slander. but always
the same answer - no word since his sudden
departure from Paris after the contest with the
Faculty

1, But you Andreas, I am quite as astounded
what brings you here? and just the same
as. pack & bright & gay. It does my heart good
to see you again

V I am on my way to Basel with a precious
load -

S But tell me what brings you here.

S. I have lived in this town for three years. You remember
the companion & friend who befriended me
so warmly at the Court Parisien, the youthful
pedant, even then antithesis of Vesalius & Paracelsus
all three. when the decree of the Faculty Parlement
was obtained & I could no longer suffer myself
to believe in astrology. I had to return from
Ad Castil with the printer & at Charlieu I
began practice & at the same time undertook some
works for my Ad from the Frenchmen. That I had
not been there many months before Vasanus
sought me & offered me a place in his
household as physician with liberty to
practice & to pursue my studies. Come
to the Palace. We will leave and walk the
way for them to bring your boxes

V Let us halt a moment Michael at this
lovely spot - that I may talk about for

and A. Keith

Writers

Greg Rolleston

a few minutes I was enchanted with the views as we came up the river. Point me out – there interesting old ruins.

S.

V What charming rooms you have! – and such a views! what a contrast to our old quarters in the rue . and both so cosy – there! ah! that bit. you must have a great world on progress. How delighted I am to free free. ~~not to have~~ at last after five years of incessant toil. But are you sure you gave the men directions when to bring the boxes. I could not sleep a wink if I had not my precious burden near at hand – and I must show you this evening my magnum Opus. Michael I have
But we have much to speak of before I can speak of it. Tell me about your life – what do you do? Do you work at your anatomical studies? or have you wandered off again to your favorite Hastings. What (whispering) would the good archbishop say of to know that you were Villeneuve, the author of that vile physicians

S Hush! for heavens sake! I have myself forgotten my identity. Not a soul suspects that I am Villeneuve and you alone know my secret

day in Paris when Charles Lucas was discussing about the relation of the vena portæ & inferior cave after your demonstration and turned to us with his face beaming with pride turned to us and said Here is our young master we have seen nothing like this in the School

V Shortly after you left Paris I returned to Louvain and spent some time with my family. my father had been ill, he is ~~nothing~~ you remember to , and there were many things to be arranged. My little book on Rhazes which I published – 1837 gave him great pleasure and he urged me to continue my studies ... It is more difficult to get books in Louvain than in Paris and I very nearly got into serious trouble over a skeleton

S Your old friend Andreas! How you startled us Paris was always a marvel to us

V One day my father said: "Andreas why not go to ~~Louvain~~ Italy? there even when I was a student the astronomers were great. I have friends in all the schools and we can have letters of introduction from the court. There are many students at Padua & Bologna. and there will be some advantage perhaps in letting ... from Bologna or Padua

Baker and A. Keith

Many Writers

Humphrey Rolleston

–56.

"Stokes-Adams Disease"

published in the article by W. Osler and A. Keith
in A System of Medicine by Many Writers
edited by Clifford Allbutt and Humphrey Rolleston
Lond. (Macmillan) 1909. vi. Hf. 130–56.

48 ~~76~~
3

Vesalius Vesal + Michel Servet

S and now andreas tell me about your-
self and your work. Do you remember the
day in Paris when Charles Etienne was
when Andernach brought us plumbing with
dissecting about the relation of the
vena portæ & superior cave after your
demonstration andernach turned to us
~~with~~ his face beaming with pride turned
to us and said Here is our young master
We have seen nothing like them in the School.

V Shortly after you left Paris I returned to
Louvain and spent some time with my
family. My father had been ill, he was
apothecary you remember to , and
there was many things to be arranged. My little
Parisian book on Rhazes which I published in 1537
gave him great pleasure and he urged
me to continue my studies ... It is much
difficult to get bodies in Louvain than in Paris
and I very nearly got into serious trouble over
a skeleton

S Your old friend Andreas! How you enjoyed
in Paris was always a marvel to us

V One day my father said: "Andreas why
not go to ~~Padua~~ Bologna? where there
1 when I was a student the advantages were
great. I have friends in all the schools and
we can have letters of introduction from the court.
There are many learned men at Padua & Bologna.
and there will be some advantage perhaps in
taking a degree from Bologna or Padua

Notes

Canus - at Vesathon

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11

Stokes-Adams

Disease

Definition - History. Classification of
Cases - Clinical Picture
Morbid Anatomy (Results of)
Symptomatology, Pathological Physiology
Diagnosis, Treatment.

B

William Osler M.D. F.R.S.

Aged

K.

anatomical condition. From our present knowledge, it seems likely that there will be several morbid changes found. In the post febrile group, as in case I, of my first series, and as in the cases of Hoffman and Schuster, there is probably an acute myocarditis. Secondly, the syphilitic changes, e either a gumma or a leutic arteritis; thirdly, new growth, as in the case of Luce; fourthly, arterio sclerosis. Huchard's remark

is certainly correct clinically, and it will probably turn out to be equally correct anatomically. The long standing cases in elderly persons will doubtless, as in Schmoll's patient, be found to be associated with degenerative changes in the myocardium of the septum; fifthly, it is quite possible that there will be cases in which no coarse lesions are found. It is not likely that any microscopic changes would be found in the cases due to a toxinemia, as from tobacco, and in the remarkable group in which the slow pulse and vertigo seem to be only part of the neurasthenic state. In the remarkable cases reported by Eades there were no arterio sclerosis and no coarse changes in the heart, but no microscopical examination was made of the septum.

Stokes-Adams Disease?

Definition A condition of slow pulse with syncopal, apoplectiform or Epileptiform attacks associated ~~with~~ with derangement of the functional system of the heart (b) with affections of the nerve centre of the vagi or of the nerves themselves

History Morgagni gave the first description of the disease ~~and~~ ~~were not up to the confusion which would arise from name~~ ~~Walton then there~~ (Copy from English Edition of Morg. ~~Letter~~ Letters LXIV &.

~~Stokes~~

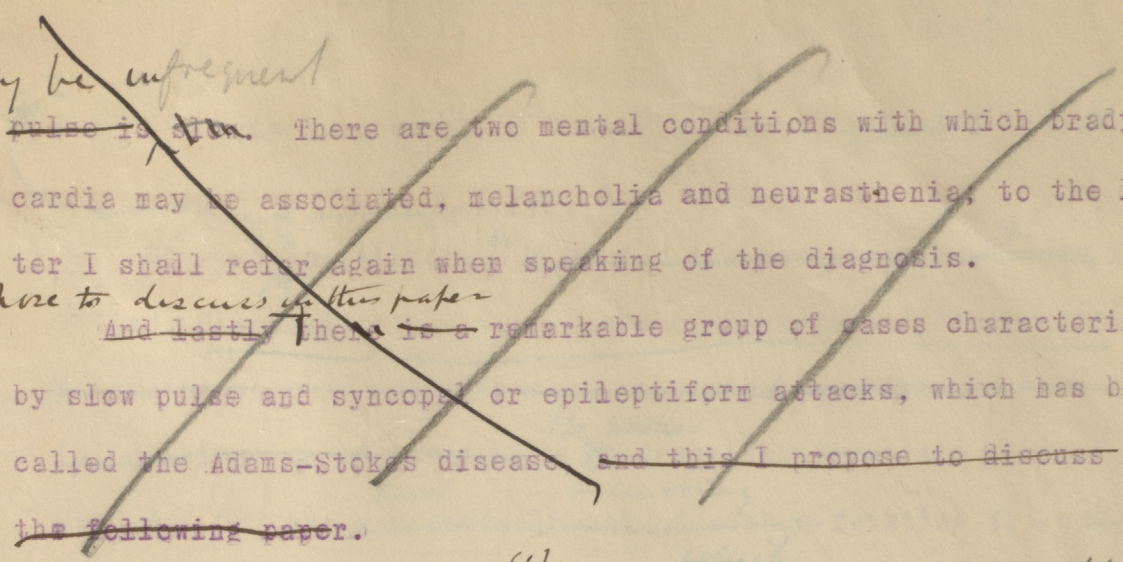
Our modern knowledge dates from the work of two Irish Physicians, Adams & Stokes, whose original descriptions may be summarized (Fig. 1 a & 1, b.

Reports of cases appeared from time to time in the literature In France, in 1872, Charcot[1] called attention to it, and in his Traité des Maladies du Coeur, (1889) Huchard gave an admirable description, ~~after~~ and called the condition Stokes-Adams disease. In this country very little attention was paid to it until Webster's[2] excellent paper in which the cases were carefully studied by the Graphic methods. His paper in the Lancet (1903) served to call attention to the comparative frequency of the condition, and to the various groups of cases. In Germany the studies of Stein (1899) Jacquet (1902) Lue[3] (1902) stimulated the physiological interest in the subject, and brought the syndrome into relation with Gaskell's Heart-block. In the United States the clinical features of slow pulse were very fully considered by Prentiss[6] & by Eder (1901)[7] ~~within the past few years~~ Recently the brilliant anatomical ~~studies~~ demonstrations of Keith-Flack ~~of the~~ auriculo-ventricular functional system of fibres, the physiological studies of Erlanger[8] on Heart-block the pathological investigations of the cases by Keith & others have combined to arouse the keenest interest in the subject in which more than 200 separate papers have appeared within the last four years. References to these may be found in Nothnagel's Medicine and in Pletnew's critical digest in Vol I of the Klinische Erfahrungen (1908)

(1) Leçons sur les Maladies du Système Nerveux 1872
(2) Dublin Hospital Reports 1827. Vol IV
(3) Deutsche. Archiv. f. Klin. Med. Bd 64
(4) Ibid Bd 67
(5) Ibid Bd. 74
(6) Trans. Assoc. Amer. Physicians Vol iv
(7) Phila. Med. Journal 1901
(8) Journal of Experimental Medicine 1905

1. Dublin Hospital Reports, Vol. IV, 1827, p. 396.
2. ~~Dublin Journal of Medical Science, Vol. IX, 1836.~~

1 a



may be infrequent

heart- action ~~pulse is slow.~~ There are two mental conditions with which brady-cardia may be associated, melancholia and neurasthenia; to the latter I shall refer again when speaking of the diagnosis.

I propose to discuss it in this paper

~~And lastly there is a~~ remarkable group of cases characterized by slow pulse and syncopal or epileptiform attacks, which has been called the Adams-Stokes disease, ~~and this I propose to discuss in the following paper.~~

11 ~~Historical Note.~~ Adams's[1] ~~description is of interest. The~~ patient, aged 68, was of full habit, and subject to oppression of breathing and cough. When seen he was just recovering from the effects of an apoplectic attack, which had suddenly seized him three days before, but he was well enough to be about the house and even to go out. What attracted Mr. Adams's attention was the ~~aspect~~ character of the breathing and the remarkable slowness of the pulse, 30 to the minute. His regular attendant informed Mr. Adams that during seven years this patient had had not less than twenty apoplectic attacks. After a day or two or heaviness and lethargy he would fall down completely insensible, and on several occasions had hurt himself. The pulse would become slower than usual, and the breathing loudly stertorous. He never had any paralysis after the attacks. Death followed an attack, and the heart was found to be very fatty. The valves were sound. There was no statement about the coronary arteries.

R. W. Smith[2] refers to this case, and states that he had also noted a condition of slow pulse with fatty heart.

1. Dublin Hospital Reports, Vol. IV, 1827, p. 396.
2. ~~Dublin Journal of Medical Science, Vol. IX, 1836.~~

B 1.6.

(2) Dublin Quarterly Journal of Medical Science, ~~Vol. II,~~ 1846.

much more important -

Stokes's contribution ~~is by far the most important.~~ ~~It~~ is entitled, Observations on Some Cases of Permenently Slow Pulse, ~~and~~ ~~He states that Mr. Adams's case presented he thinks, a very special combination of symptoms.~~ He Stokes describes ~~first~~ the case of a man aged 68, who ~~was suddenly seized with a~~ had recurring fainting fits ~~which recurred several times during the day, and always~~ which left him without any unpleasant effects. ~~They continued for~~ During three years, ~~during which time~~ he had had at least fifty ~~such~~ seizures. They were induced by any circumstance tending to impede or oppress the heart action, as sudden exertion or distended stomach. He was never convulsed. The duration of the attack was seldom more than four or five minutes, and during this time he was perfectly insensible. He had never ~~any~~ paralysis. When admitted his general health seemed very good. There was an apex systolic bruit, pulse 28 in the minute. The arteries appeared to be in a state of permanent distension, "the temporal arteries ramifying under the scalp just as they are seen in a well injected subject." An interesting feature in this case was that the patient could ward off attacks by a peculiar manoeuvre. "As soon as he perceived symptoms of the approaching attack he directly turns on his hands and knees, keeping his head low, and by this means he says he often averts what otherwise would end in an attack." While his heart was beating only at 28 Stokes noticed that there were occasional semi-beats between the regular contractions, eight of them in the minute.

On his readmission there was noted a new symptom, a remarkable pulsation in the right ~~jugular~~ jugular vein, which was more than double the manifest ventricular contractions.

Beynatt occasional reports of case special importance
English writers have ~~Classed~~ Given the condition, not much
has appeared in English on the subject. The condition is only mentioned
incidentally in Abbott's System. Gibson however discusses it in a very
good section
In France Charcot called attention to it in 1872 & Huchard
owe a revival of interest, and in the various editions of his Traité
des Maladies des Coeur, under the name Stokes-Adams Disease
is found the best description in literature. In Germany until
quite recently the condition had not attracted attention ~~not recently~~

Classification of the Cases and Nomenclature

Over.

P. I. to change the name to Herzaspinis disease thought the ~~accident~~ ~~right~~ first description was given in Ozpina, & it is best to keep the name still - adding Syphilitic. as disease. Strictly speaking it is not a clinical unit - which could be proven clinically & pathologically that it can be classed as a disease and yet, as with angina pectoris, there is a symptom-complex sufficiently definite enough to warrant the use of the word. It must be limited to cases which present heart-block plus cerebral features, and not to the various phases of heart-block alone

Incidence

age & sex

The cases are not uncommon as the literature of the past few years indicates. In 1903 I reported 13 cases, since which date I have seen others seven. Men are much more often affected - in my series all were men than women. ~~It is probable that they may be fallen as an average.~~ The age incidence varies with the cause - in a small group, due to the ante-uterine, young persons may be attacked. Schneider's patient was a girl of 4. In the group due to syphilis men between the ages of 20 & 40 are affected, while the great majority are men who have reached the period of arterial degeneration. Of my 20 cases ~~which are under 30~~, 2 were between 30 & 40, 6 between 40, 6 between 50 and 60 & between 60 and 70; and 4 above 70. My oldest patient was a man of 74

Clinical Picture

I Cardiac Group

A man of 60 or 70, healthy & strong, or a younger man who has had syphilis, has an attack of vertigo or faints or has a slight epileptic seizure, and his physician finds that he has a pulse of forty or fifty per minute. Weeks or months may pass before there is a second attack, & meanwhile the patient feels well and goes about his business as usual. There may be no subjective sensations about the heart - the pulse remains permanently slow, and may sink to 20 or 25 and remain at that rate for years. A study of the heart ~~may~~ shows nothing abnormal, & the sounds are clear & the beats strong and natural - only slow. In a few cases they may be very feeble. ~~A study~~ Careful inspection usually shows the venous pulse in the neck to be 2 - 3 or 4 times the rate of the ~~arterial pulse~~ Carotid. ~~A slow pulse recorded~~. Sometimes in the intervals between the cerebral attacks the pulse rate is normal, but the rule is a permanently slow pulse, which may not vary more than a beat or two in a minute for years. Angina pectoris may complicate the cardiac condition, or there may be signs of myocarditis with infiltration of the lungs, dyspnoea, chequa-Stokes breathing &c. but the even tenor of the cardiac rhythm, once established is not often disturbed. In some cases the cerebral attacks are pseudo-apoplectic, as Stokes called them, and they may recur with great frequency, and though apparently serious the patient recovers quickly and may go about his business often an hour after an attack, as if nothing had happened.

12 per minute.

died before we got the head into a position to relieve the pressure. He died subsequently in an attack & the post-mortem showed the description of the check ligaments

(2) Of a very similar nature are the cases with narrowing by disease of the lumen of the vertebral canal. There was the case of the patient of Halberton[1] who had had a fall five years before. Enlargement of the odontoid process was present. In Lepine's case[2] narrowing of the canal caused pressure in the left side of the medulla

(1) Med & Co. Chirurgical Society Trans. 1841
(2) Lyon Medicale 1889

(1) Med. Chir. Trans. Lond. Vol. LXXIX - 1896

Bradycardia is a very common condition, is due to influences
acting on the nerve centres (or the vagi) or to changes in the heart itself;
and with either the neurogenic or the cardiac group may be associated
the cerebral features which ~~go to the added character~~ of the
Stokes-Adams syndrome. The disturbance of rythm which we know
as heart-block is not an invariable accompaniment of bradycardia.
I do not know that its nature has been determined in the cases due to organic
disease of the medulla in the cases in which, ~~due to nervous influence~~
the heart ~~eyes~~ simply slows down, without change in its rythym, ~~this~~
~~may be the Stokes Adams syndrome may be present~~. The syncope,
~~Epileptiform~~ ~~while in syncope it is a~~ features are epi-phenomena of bradycardia, however
induced. ~~XXX~~ fits. ~~It~~ that the syndrome was ever labelled a disease yet-
as in the case of angina pectoris, the symptomatology is very definite
however ~~vaged~~ the pathology attach
Since it is too late to change the syndrome to Morgagni the name to Stokes-Adams ~~syndrome~~
~~and~~ we may continue to call ~~it~~ the name, ~~disease~~;
and remembering the remark of Socrates that "it matters
little what names you give to things so long as you tell us just
what the things are" I may repeat that under this designation
will be described the cases with slow pulse and syncopal &
epileptiform attacks ~~and~~ the two groups of Cardiac & Neurogenic

~~Cardiac group~~

In D'Offards case[1] there was narrowing of the occipital foramen

(3) Tumours of the medulla - aneurism, sarcoma, gumma, tumours in the neighbourhood as the cerebellum may cause slow pulse and syncopal attacks". Eales gives a long series of cases collected from the literature, a majority with slow pulse ~~only~~ alone. In a ~~Gumma~~ Sarcoma of the medulla which I reported the young man had had vertiginous attacks but at the end there were syncope & a pulse rate of from 6 to 8 per

The cerebral symptoms vary in different cases. Attacks resembling petit mal are perhaps the most common, with twitchings of the hands and face. The epileptic fit with its orderly sequence of events is rare. Slight aurae may precede an attack, and the patient may be able to ward it off after recurring for a year or more the attacks may cease, in other cases they recur with extraordinary frequency, and thirty, fifty or even 150 in a day, ~~short~~ brief periods of ~~loss~~ loss of consciousness with twitchings of the muscles. During such paroxysms the ~~beat~~ pulse may sink to 6 or 8, & then may be prolonged intervals between the ventricular beats. After lasting from ½ to 10, ~~24 hrs~~ or more grave the patient dies in an attack or is found dead suddenly, or dies in an attack of angina pectoris, more rarely he is carried off by heart failure or by ~~not~~ an intercurrent disease. In the syphilitic cases complete recovery may follow proper treatment. This is the ~~cardiac~~ clinical picture of the average case, and anatomically there have been found lesions in the heart involving the functional system - either sclerosis of the Kent-His bundle, or fatty degeneration or a gumma or wide spread changes in the system itself.

In a ~~few~~ second group of cases ~~the Stokes-Adams syndrome~~ they are associated with a lesion of the medulla or the vagi causing slow pulse and convulsions

(b) Neurogenous group. The medulla and 10 the pain fibres are involved. ie, (1), A fracture of the cervical spine or dislocation due to trauma or disease. Slow pulse is more commonly present with alone, ~~or in Hebetudo~~ but ~~often high~~ the ~~the~~ pressure may also cause transient loss of consciousness. A man in ward 11 of the Montreal general Hospital had tuberculous disease of the 1st & 2nd cervical vertebrae. On several occasions[2] he fell in syncope & had slow pulse. I well remember when helping to put on a plaster jacket to support the head that as a result of a sudden movement he became unconscious and the pulse sank to 10 or 12 per minute. He was dead before we got the head into a position to relieve the pressure. He died subsequently in an attack & the post-mortem showed ~~the~~ destruction of the check ligaments

(2) Of a very similar nature are the cases with narrowing by disease of the lumen of the vertebral canal. This was the case in the patient of Halberton[1] who had had a fall five years before. Enlargement of the odontoid process was present. In Lepine's case[2] narrowing of the canal caused pressure on the left side of the medulla

(1) Med & Co. Chirurgical Society Trans. 1841
(2) Lyon Médical 1884

Bradycardia, a very common condition, is due to influences
acting on the nerve centres (or the vagi) or to changes in the heart itself;
and with either this neurogenic or cardiac group may be associated
the cerebral features which ~~form the added character of~~ the
Stokes-Adams syndrome. The disturbance of rythem which we know
as heart-block is not an invariable accompaniment of bradycardia
I do not know that its nature has been determined in the cases due to organic
disease of the medulla in the cases in which, ~~due to nervous influence~~
the heart ~~only~~ simply slows down, without change in its rythem, the
~~Stokes-Adams syndrome may be present~~. The symptoms

In Dr Ffords case[11] there was narrowing of the occipital foramen

(3) Tumours of the medulla - aneurism, sarcoma, gumma, tumours in the neighbourhood as in the cerebellum may cause slow pulse and syncopal attacks[1]. Eden gives a long series of cases collected from the literature, a majority with slow pulse ~~only~~ alone. In a ~~Gumma~~ Sarcoma of the medulla which I reported the young man had had vertiginous attacks but at the end there were syncope & a pulse rate of from 6 to 8 per minute. Rosenberger & Edinger[2] report the case of a man aged 46 with vertigo and fainting fits. For 8 days before his death there were deviation of the head and eyes and a slow rate of 16 per minute. The post-mortem showed abscess of the right lobe of the cerebellum and a tumor which was in a position to irritate the vagus. ~~The~~ In the case of Brissaud[3] the gumma was in the cerebellar peduncle

(4) In Case[4] changes were found in the nuclei of the medulla. - (Dear Edsall. Get Hunter paper & look up the case & fill in)
W.D.

(5) P.T.O. →

(6) In the absence of careful studies of ~~cases~~ medulla and heart we must for the present rule out the functional group ~~such~~ into which such a case as Eden has been placed. An ~~elderly~~ recent woman aged 50 had for seven or eight months recurring attacks of loss of consciousness in which the pulse fell to 20 per minute. No ~~case~~ changes were found in heart or brain

by modern methods

The cases in this group require further study by modern methods. We do not know whether heart block exists or not. I know of no cases in which careful tracings have been taken and analyzed. ~~In the case~~

1 Archives de Méd. Et Perimentelle. 1890
2 Berliner Klin Wochenschrift. 1895
3 Leçons sur les maladies nerveuses 1895
4

---

in the throat seem

he was very anæmic and ~~He~~ had to support himself by chairs

Transient mental confusion may be associated with the vertigo. ~~Brain~~

case (no 3) ~~was not~~ transient aphasia ~~was~~ is common a symptom in cerebral arteriosclerosis not infrequently followed an attack.

fainting. Syncope ~~is~~ was one of the most common features, ~~of~~ ~~was present~~ of these cases. Without warning, while about his work or in the street, or while speaking in public the ~~patient falls as~~ ~~unconscious~~ usually with pallor, or the face has an ashen-grey hue. The suddenness of onset, with the slightest premonition is an interesting feature of the

15) The vagi themselves may be involved in a neuritis.
~~This was~~ The case of Zurhelle's (quoted by Pletnew) is possibly of
the nature. In the second week of a febrile attack a man
began + have pains in the left side of the neck & later on the
right side increased by pressure Swallowing was difficult. The heart became irr
regular and the pulse gradually sank to 36 in the minute
and there were attacks of fainting with clonic contractions
of the muscles. Then he had inflammation of the lungs and
a bilateral paralysis of the recurrent laryngeal nerves with
hoarseness of the voice. Recovery took place gradually

attack and give it a cerebral rather than a cardiac character. On this point Sir William Gairdner writing about time his own case, Oct. 1903 "the sensations so far as I could judge were not those of swooning, & still less of any apoplectiform seizure, but rather, I would say, of anything epileptiform" The loss of consciousness may be for a few seconds only, so that the patient falls, but gets up immediately, or it may last a minute or two, The longest simple cerebral attack in any [illegible] ten minutes. There are remarkable attacks

Symptomatology

1 Symptoms complained of by the patient. As a rule, it is a painless affection, and the cerebral features are usually the first it call attention to its existence. Transient vertigo, a die-away feeling, an attack of faintness or a more severe loss of consciousness with convulsions alarm the patient and make him consult a physician. Occasionally patient complained of pain in the right hypochondriac region; headaches, dyspnoea, or pain in the arteries may be present. Palpitation, a sense of cardiac oppression & in a few cases attacks of angina have been recorded, but as a rule there are no unpleasant sensations about the heart. Symptoms of cardiac failure may come on in cases, dyspnoea & dropsy; but these are rare and were present in only two of my series. The patients may become very nervous and apprehensive or even present a picture of aggravated Neurasthenia.

2 The cerebral attacks. The pulse may be slow for years without causing any discomfort but so soon as giddiness a fainting or an epileptic fit occurs the patient becomes alarmed and seeks advice. Vertigo is one of the earliest and most common symptom. On getting out of bed or on the street the patient experiences a sudden sensation as if he were about to fall, but he recovers himself easily. One of my patients (no 2) had as many as 25 of these 'spells' in the day, never quite loss of consciousness. The condition may be mistaken for the ordinary arterio-sclerotic vertigo, so common in elderly people. In the neurasthenic group of cases of bradycardia giddiness may be a very marked feature In one case (no 14 grey cases) a young man aged 20 with a pulse of 42, had attacks in which he felt - "giddy-headed" & everything in the room seemed to turn round; when he tried to get up he was very unsteady and had to support himself by chairs Transient mental confusion may be associated with the vertigo. Rarely transient aphasia a common symptom in cerebral case (no 3) arteriosclerosis) not infrequently followed an attack.

Fainting. Syncope is one of the most common features, of the cases. Without warning, while about his work or in the street, or while speaking in public the patient falls & loses consciousness usually quite pallor, or the face has an ashen-grey hue. The suddenness of onset, without the slightest premonition is an interesting feature of the

attack and give to it a cerebral rather than a cardiac character. On this point Sir William Gairdner writing some time about his own case, Oct. 1903 "the sensations so far as I could judge were not those of swooning, & still less of any apoplectiform seizure, but rather, I would say, of anything epileptiform" The loss of consciousness may be for a few seconds only, so that the patient falls, but gets up immediately, or it may last a minute or two, The longest simple syncopal attack in my own cases was ten minutes. There are remarkable attacks with all the associated phenomena of a fainting fit but no loss of consciousness. One patient could even take the hands & pulse got cold, he sweated & the heart got slower & more feeble, but in constantly recurring attacks this can't be only actually fainted twice. As Sir William Gairdner insisted there are really epileptiform, i.e. cerebral, not syncopal in character.

Apoplectiform attacks. Stokes described these as pseudo-apoplectiform as the patient had all the appearance of having fallen into a had a stroke, but in little while recovered without any trace of paralysis. This is not a common form & occurred in only one of my cases. In Case 6. ~~from cerebral~~ a large gall stone man ~~a large~~ had for ten years slow pulse with vertigo and occasional attacks in which he ~~fell & became~~ dropped unconscious, had stertorous breathing and the pulse fell to 20 per minute. After lasting from five to fifteen minutes consciousness returned & in a little while he was able to go about his business. This patient had hundreds such attacks, sometimes two or three a week. Later he had transient losses of consciousness like petit mal, in which he did not fall, ~~and he had~~ followed by motor aphasia of short duration

Petit mal. The vertiginous attacks are sometimes of the nature of petit mal and ~~in some~~ cases these are recurring periods of momentary dazing or a sensation of "dying-away" In others true petit mal occurs, transient loss of consciousness, with pallor of the face, but without loss of control of the voluntary muscles so that the patient does not fall. Mental confusion may follow, but as a rule the individual knows when he has had an attack, which is not always

in which the slight epileptoid

regularly - one or two in the day. A patient seen with Dr Turnell had them most often just as he was taking his breakfast. In other cases the attacks occur at long intervals, after persisting for years they may cease entirely. Mental excitement bodily exertion, & flatulence are liable to bring on the attacks. One patient never had them when resting quietly, but when up about or else tried to do a little gardening the attacks occurred. The attacks may sometimes be averted. A Stokes patient when he felt the symptoms approaching he turned on his hands & knees, keeping the head low and in this way prevented a seizure. Dr Turnells

patient could sometimes stop the attack if he could in time grasp firmly the bar of the bedstead, just above his head. Case 12 of my series could sometimes keep himself from fainting by rubbing the wrist forcibly.

Cardio-vascular features. In a majority of all cases arterio-sclerosis is present in my series, usually the senile type. As Slater remarked the permanently slow arterial pulse is the special characteristic of the condition. It is usually under 40 per minute and regular. In a few cases it is between ... and 70 and

7 59.

the case with petit mal — "The absolute instantaneousness of the attacks, the absence of premonitions, and of all permanent recall seemed to me most in harmony with a minor epilepsy than with either syncope or apoplexy ... ... in some of the attacks where the loss of consciousness was not absolute and I retained sufficient self-possession to watch carefully for the access (occurring as it did in some nights between 12 and 20 times) I seemed to realise in my consciousness something (like a faint trace of an aura" (Gardner)

Convulsive attacks. These may be mild or severe, either localised twitchings of the muscles of the face & arms or general convulsions which have all the characters of a true epileptic attack. The mild seizures are the more common. In my series 14 had attacks of unconsciousness only; 4 had slight movements of the muscles of face & arms as well and 2 had more severe attacks. "The following are descriptions of attacks over" the most of which I have seen: "... the eyes were turned to the left and became fixed & he lost consciousness, the muscles of the face twitched, and those of the hands worked in slight clonic movements. The face became pale. The heart beat which had been 16 per minute sank to 12 but remained regular & forcible, the apex beat could be seen In about half a minute he regained consciousness and seemed quite himself". In another case of the patient shook hands with me & spoke quite naturally, the pulse was 20 per minute. After I had finished the examination & had gone - the pulse suddenly stopped at the wrist, & one could not feel the heart impulse, the features became pale, the face slightly cyanosed, the breath was held, there was a general tremble of the muscles, the eyes twitched, the eyeballs rolled up & the hands moved slightly. Within half a minute he was conscious again, the pulse began at regular rhythm at about 20. The interval in which no heart beat could be felt or heard ranged from 20 to 35 seconds. The patient had scores of such attacks in the day - I so by actual count. The rate & vigour of the heart does not necessarily change in these attacks, but there may be a complete cessation of the heart action for from half a minute to 2½ minutes (+10 seconds) in Stengel's case. The loss of consciousness is rarely more than a few minutes but it may last half an hour and Stengel's patient remained unconscious for 36 hours. Over 2 There are cases in which the slight epileptiform seizures occur daily with great regularity - one or two in the day. A patient seen with Dr Turrell had them most often just as he was taking his breakfast. In other cases the attacks occur at long intervals, often persisting for years they may cease entirely. Mental excitement bodily exertion & flatulence are liable to bring on the attacks. One patient never had them when resting quietly, but when up & about or after tried to do a little gardening the attacks recurred. The attacks may sometimes be averted. (Slater patient) When he felt the symptoms approaching he turned on his hands & knees, keeping the head low and in this way prevented a seizure. Dr Turrells

, Auras may precede the attacks but they are not so common as in true epilepsy. - peculiar feeling in the head, buzzing in the ears precordial distress, or a sensation proceeding from the heart, laughing or a sensation as of a wave of heat passing from the periphery, or a sensation of a lump in the stomach rising through the right side to the head when it burst with a thunder-clap. (Sturges) are among the sensations which I find described.

2 The breathing may be impeded for a few seconds, sometimes it is smothered. The Cheyne-Stokes type is not infrequent. It may begin during a prolonged attack

patient could sometimes stop the attack if he could in time ~~catch~~ grasp firmly the bar of the bedstead, just above his head. Case 12 of my series could sometimes keep himself from fainting by robbing the wrist forcibly.

Cardio-vascular features. In a majority of all cases arterio-sclerosis is present in my series, usually the senile type. As Stokes remarked the permanently slow arterial pulse is the special characteristic of the condition. ~~In a majority of the~~ It is usually under 40 per minute and regular. In a few cases it is between 40 and 60. There are patients with a pulse rate between 20 and 30 for long periods. Dr Turrell's patient had the pulse taken by a nurse three times a day for Eight years — a unique record which is worth quoting

> thrice daily, oftentimes more. The records begin on July 25th, 1900, some few days after the series of convulsions; the rate was then 38 to 40. On July 26th, 1900, it became quicker, about 53 to 55. From that date on it ranged about 60, never being below 50 and never above 72 till September 21st of the same year, when a rate of 40 was recorded. On October 1st a pulse-rate of 32 was recorded, and from that date the rate was for the most part between 30 and 40, except for intervals of two or three weeks, when it was 50 to 60. From October 31st, 1901, it was below 40, except for an isolated observation on July 22nd, 1904, when it was 68 after an attack of convulsions. During this period up to his death the rate was never observed below 16—that is, apart from convulsive attacks—and seldom above 37.

~~In the good patients the pulse had been slow all his life~~ ~~either~~ ~~failed to~~ ~~persuadingly~~ ~~antagonistic~~ ~~religious~~ ~~attacks~~. In case 20 the slow pulse only came on at the time of the attacks, and in the intervals the rate was normal. He passed an entire year without an attack, & the pulse was always above 78. Then for two months it was between 25 and 28 and the synchopal attacks recurred. In the senile form, the pulse becomes permanently ~~of the~~ slow ~~pulse of the rule~~, and the patient may be perfectly comfortable for years with a rate of from 20 to 30 per minute. The Regularity in the rhythm is almost the rule, in a few cases there are extra-systoles Very few circumstances influence the pulse rate when once permanent bradycardia is established. Emotion & Exercise may not raise the rate above more than a few beats. Following the cerebral attacks the rate may be increased, an attack of indigestion, or a febrile attack may do the same. There may be no difference in the pulse rate between the recumbent & the standing posture or after Exercise. As a rule atropin produces no quickening of the ventricular rate in the cardiac cases; in bradycardia from while of vago-medullary origin the pulse is accelerated.

The Venous pulse. I [illegible] noted in his case the remarkable pulsations of the jugular vein - which were more than double the ventricular contractions. When the patient is seen this peculiarity is constantly present and studied by the new Graphic methods has thrown much light on the physiology of the condition. Sometimes only an undulating impulse is seen or a series of beats following each other so rapidly that it is hard to distinguish them, while in some cases the

The blood pressure is usually increased - In sixteen cases in which I found it recorded the range was between 130 and 270 ! In young patient with syphilis it may be normal. Marked variations may occur in individual cases from time to time. There is no relation between changes in the pressure & the incidence of the cerebral attacks.

The pulse in relation to the cerebral attacks As Webster pointed out in his careful study the slower pulse usually accompanies the attack, E.g. a rate of 20 or 25 per minute may fall to 10 or 12. In the severe attacks, particularly in the cases in which many occur in the day, the pulse at the wrist & the heart beat may be imperceptible, for some seconds - or even for more than two minutes, as in Sleigh's case. In some cases the attacks follow a drop of 8 or 10 beats per minute; on the other hand, when a permanently slow rate is established at, say, 25, attacks may be more likely to come on, as in Dr. Turrell's patient, when the pulse rises to 30. In the same case irregularity had a marked influence, an occasional drop made no difference but if the pulse missed two beats in succession he had hard work to retain consciousness, & often an attack followed. During the very slow beats there may have an extraordinary vigor & sense of fullness, which corresponds with the strong action of the heart.

The Venous pulse. I have noted in his case the remarkable pulsations of the jugular vein which were more than double the ventricular contractions. When the patient is seen the peculiarity is constantly present and studied by the new Graphic method has thrown much light on the physiology of the condition. Sometimes only an undulatory impulse is seen or a series of beats following each other so rapidly that it is hard to distinguish them, while in some cases the beats are readily counted; but the Graphic method enables the rythem to be studied accurately. The following series of tracings on page with analysis will give a clear idea of the relation of the venous & arterial pulses.

clear and valvular, like the ringing flapping sound in mitral stenosis; or a loud booming cannon-tone of extraordinary intensity. The second sound at the base may be greatly accentuated, and the bell-like amphoric quality with changes in the myocardium & valves, the usual associated phenomena, as a gallop rythem, which was present in several of my cases; in 6 a mitral systolic murmur — 2 an aortic systolic, and in cases 10 and 13 the organic murmur was aortic was present. A terminal pericarditis occurred in case 8.

~~The~~ ~~conclusion~~ In several cases soft sounds were heard in the interval between the ordinary heart beats. In case 5 there was heard after the loud first, a faint systolic sound. In this case when he was having many fainting & epileptiform attacks and the pulse was 12 at the wrist ~~at 12 per minute~~ with very loud booming heart sounds & a fluttering jugular pulse at about 120 per minute there were seen in the 4th & 6th interspaces "small regular systolic impulses, exactly 100 to the minute and correspondingly & these could be heard faint systolic sounds at the same rate," ~~heard~~ in the long diastolic interval "

The heart: Inspection may show nothing abnormal. In 11 of my cases the apex beat was visible, ~~and in the normal situation~~, in 9 it was not seen, in 5 the impulse was forcible and outside of the nipple line. Sometimes as in case 5 without hypertrophy the impulse is very strong, and shakes the chest. A heavy impulse has been seen in the diastolic period over the ~~pit~~ of the cordis.

Palpation. An ordinary normal impulse may be felt, only the beats are slow; no pulsation may be felt. ~~In cases~~ Even after exertion; a gallop rythm may be both seen & felt. The shock of the first sound may be very intense and a sharp diastolic snap at the base may be felt; valvular disease or with senile sclerosis a thrill may be present usually at the base (case 2)

Percussion. The area of flatness may be normal, or in the aged diminished by emphysema. When increased it is usually in association with valvular disease. In only 6 of my cases was the heart evidently hypertrophied

Auscultation. The sounds may be normal, the first in relative intensity, and this is the case in a majority of the patients, particularly in the interval between the cerebral attacks. The sounds may be muffled or quite inaudible In case 4 it was impossible at times to hear the sounds, after exertion a feeble first could be heard with a soft murmur, but I repeatedly examined him when it was impossible to hear anything at apex or base. On the other hand the sound may be exaggerated, the first either clear and valvular, like the ringing flapping sound in mitral stenosis; or a loud booming cannon-tone of extraordinary intensity. The second sound at the base may be greatly accentuated, and of a bell-like amphoric quality with changes in the myocardium & valves are the usual associated phenomena as a gallop rythm which was present in several of my cases; in 8 a mitral systolic murmur in 2 an aortic systolic, and in cases 10 and 13 ~~in the cases of~~ ~~was~~ aortic murmurs were present. A terminal pericarditis occurred in case 8.

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In case 6 there were heard in the long diastolic interval a feeble ~~interval~~ tones. ~~could be heard,~~ ~~but~~ I could never determine that these soft intervening sounds corresponded accurately with the auricular beats, and they are not heard in a majority of the cases, even when the pulse in the neck is well marked

During the attacks the pulse rate may not alter, but as a rule the heart beats more slowly, and there may be prolonged intervals in which no impulse or sounds are perceptible. Thirty five seconds, the longest interval I have noted but in Steiger's case neither ~~sound~~ nor impulse could be determined for more than two minutes. The impulse may be ~~ten~~ much more perceptible during the attack; as in case 5th, ~~both~~ the heart beats at 12 or 15 per minute ~~the pulse~~ ~~were~~ ~~visible~~ from the chest ~~were visible~~ with each forcible impulse, and the first sound had a booming cannon like quality.

With the fluoroscope in Case 17 Batzer was able to see clearly the auricles beating without the ventricles

In one of Gibsons cases (B. M. J. 1906 II. 22) the auricular beats were seen in the electro-cardiogram

Pulmonary features. Cases with chronic myocarditis present the usual symptoms of the condition, attacks of cardiac dyspnoea cough, or angina pectoris. In several cases I have seen the acute emphysema which Sandbach describes in angina pectoris, a state in which the lungs are full of wheezing & bubbling râles, and the area of pulmonary percussion is increased — the Lungenschwellung of von Basch. Cheyne Stokes breathing is not

14 66.

Clinical Course I The Cardiac group. ~~The~~ The cases associated with post-febrile myocarditis form a very definite and remarkable variety. Cases have been reported in connection with diphtheria, pneumonia, Gonorrheal sepsis & ~~septicemia~~ streptococcus pharyngitis complicated with nephritis. It has long been known that bradycardia may follow any one of the acute infections. Usually regarded as an indication of myocarditis it is quite possible that ~~in some cases~~ the nerve centres [illegible] with the Stokes-Adams

13 65.

in common and was present in [illegible] of my series
In the pseudo-apoplectic attacks the stertor, with deep labored respiration and expiratory puffing of the cheeks may have all the intensity of the genuine Stokes. Prior to the epileptiform attacks there may be transient arrest of respiration with flushing of the face.

Clinical Course. I The Cardiac group. The cases associated with post-febrile myocarditis form a very definite and remarkable variety. Cases have been reported in connection with diphtheria, pneumonia, Gonorrhoeal sepsis & streptococcus pharyngitis complicated with nephritis. It has long been known that bradycardia may follow any one of the acute infections. Usually regarded as an indication of myocarditis it is quite possible that the nerve centre are involved, but in the reported cases with the Stokes-Adams syndrome there were no symptoms to suggest a lesion of the medulla. Next to the Syphilitic this form is the most hopeful. Schuster's patient, a child of four, recovered after very severe attacks. The slow pulse may last for only a few days, as in a case I saw following nephritis & pharyngitis

In some of the post-febrile cases the bundle of His is involved in an acute mural endocarditis, as in the case reported by

The syphilitic group is also well defined - the lesion may be arterial or a coarse gumma involves the bundle. Only two cases in my series had a history of syphilis. The picture may be very typical - A man (no 17) aged 34, was seen Nov 17th 1904 with attacks of unconsciousness, and slow pulse. He had had Syphilis in 1897 and a Gumma of the rib in 1901. The heart-block at first complete was carefully studied by Erlanger, in whose paper the case is given in full. He was given iodide of potassium and recovered rapidly, gaining twenty pounds in three months. While under observation he had five or six severe syncopal attacks, but Both cerebral & cardiac symptoms disappeared & he has remained well. I examined him in Jan. 1906 & his heart was normal.

By far the largest group is made up of the cases in which there are degenerative changes, fibrous, fatty or pigmentary at the auriculo-ventricular node in the bundle of His or in the ramifications of the functional system. A diagnosis of the nature of the lesion is not possible. The cases occur in older individuals than in the other groups and in a large proportion of the arteriosclerosis. In a few cases the patient may have had this disease, as he is said to have had a slow pulse and he is known to have had epilepsy. When the attacks occur with great frequency 50, or 100 or more times in a day the conduction is serious. The prolonged syncope with slowing of the pulse to 8 or 10 & the attacks with protracted intervals of asystole are always dangerous. The pseudo-apoplectic attack which lasts so serious in the Stokes Adams patient had been for more than 7 years & Case 7. of my series for more than ten. As already mentioned certain circumstances tend to bring on the attacks, but we are quite at a loss to say why with an apparently unchanged conduction cardio-vascular conditions

Clinical Course of the Disease (as in the cardiac group. In the cases following an acute infection the outlook is hopeful. Schuster's case (Deutsche Med. Wochenschrift 1891) recovered after attack of great severity.

Pathological physiology As already stated the bradycardias may be due to many causes, grouped into the two divisions neurogenic & cardiac. It may be a true bradycardia involving both auricles & ventricles, or there may be complete or partial heart block. ~~not~~ In a majority of all cases of Stokes Adams syndrome there is dissociation of the auricular & ventricular contractions as shown in the tracings, and the ventricular rate becomes permanently slow. This con-

15 69.
the bundle of His has been found involved in a plaque of fibrous endocarditis in others. There has been a wide spread fatty or pigmentary degeneration of the functional system. In Case 19 (reported by Turrell & Gibson. B.M.J. Nov. 24 (t '08) the coronary arteries were sclerosed & partially calcified. The bundle of His and the main ramifications were involved in a fibrosis and the bundle itself was only represented by a few isolated strands of muscular tissue. A majority of the senile cases will probably be found of this type of lesion. In the cases of Schmidt, Gibson, Stengel & Dock the bundle was involved in a patch of chronic endocarditis. Degenerative changes or fatty nature were present in the case of Adams and of recent cases those of Mallet & of Aschoff. In case 20 of my series Dr A.G. Gibson found a wide spread brown atrophy in the fibres of the system.

The cases of this group ~~which I have collected~~ more than 90 per cent of all forms present certain special features:—

An extraordinary chronicity. While five to ten years may be taken as an average there are cases in which the symptoms have persisted for twenty years or more. Heinlein's first case was a 64 year old woman who had suffered from her 30th year. In case 7 of my series the attacks had lasted for more than ten years. Dr Turrell's case is of special interest as the pulse was latterly continuously for 8 years.

A remarkable variability in the frequency & character of the cerebral attacks. After caused a great deal of trouble and worry the syncopal & epileptiform seizures may disappear, and for years, as in the case of Sir William Gairdner, the patient may be very comfortable. Isolated epileptic attacks may occur over a long period of years. One patient had only 9 attacks in 12 years and in the interval her health was good. Possibly Napoleon may have had this disease, as he is said to have had a slow pulse and he is known to have had epilepsy. When the attacks occur with great frequency 50, or 100 or more times in a day, the condition is serious. The prolonged syncope with slowing of the pulse to 8 or 10 & the attacks with protracted intervals of asystole are always dangerous. The pseudo-apoplectic attack which ends so seriously in one of the cases of Adams patient had been for more than 7 years a case of my series for more than ten. As already mentioned certain circumstances tend to bring on the attacks, but we are quite at a loss to say why with an apparently unchanged cardio-vascular condition the

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Pathological physiology As already stated the bradycardias may be due to many causes, grouped into the two divisions neurogenous & cardiac. It may be a true bradycardia involving both auricle & ventricles, or there may be complete or partial heart block. ~~not~~ In a majority of all cases of Stokes Adams syndrome there is dissociation of the auricular & ventricular contractions as shown in the tracings, and the ventricular rate becomes permanently slow. This condition may persist for many years ~~and~~ without symptoms or there may be transient attacks of giddiness The explanation of the remarkable cerebral phenomena which characterize the Stokes - Adams syndrome is to be found ~~with~~ in a study of the cases of disease of the cervical vertebrae & in ~~one~~ the well known Kussmaul & Tenner experiment. In the patient with destruction of the check ligaments of the odontoid process, a movement which caused pressure in the medulla was immediately followed, instantaneously, indeed, by reduction in the pulse rate and loss of consciousness. It was remarkable with what ~~recovery~~ rapidity - recovery took place when his head was straightened. He had had a score or more such attacks The ~~pressure caused~~ irritation of the ~~centre~~ vagus centre (or of the nerves) ~~and~~ slowed the heart ~~and the loss of con-~~ ~~sciousness at once followed the~~ & relative ischaemia of the brain with loss of consciousness at once resulted The Kussmaul & Tenner experiment is still more startling and it may be given in his own words, describing an experiment on a friend (1) "His carotids were next forcibly ~~extended~~ placed. Scarcely had I compressed them with my fingers when he turned pale and collapsed off the stool. I had just time to catch him. He recovered consciousness immediately & said "Where am I?" It is interesting to note that Kussmaul attributes à knowledge of this fact to Galen. The transient loss of consciousness may be followed by convulsions if the pressure is maintained. In the cardiac form of cases it may not be altogether ~~an~~ vasomotor affair, as ~~the~~ is often ~~the~~ ~~case~~ ~~where~~ ~~arterio-sclerosis~~ ~~cerebral vessels are observed~~ and as Huchard suggests the arteries of the medulla may play a part: Of calcified & stiff they may not so readily adapt themselves to changes in the action of the ventricle and we know that in a certain stage of sclerosis arteries are very prone to spasm: The cerebral features of ~~cardiac~~ Reynaud's disease, the transient aphasias & monoplegia of arterio-sclerosis indicate how important a part is played by spasm & relative ischaemia. But for most of the cases of Stokes - Adams disease the Kussmaul & Tenner - gives a satisfactory explanation of the cerebral symptoms, and we need not go afield for to angio-spasm & reflex action for further explanation

(1) aus Mennen Dorcenteuzeit zu Heidelberg. 1893 p 28

cerebral symptoms should disappear.

The liability to sudden death: As in all myocardial affections this accident is very likely to happen, either in an attack of syncope or while the patient is up & about & feeling very well. It occurred ~~happened~~ in ten cases in my series

Ordinary myocardial symptoms: Dyspnoea or ~~&~~ orthopnoea, cough, signs of infiltration at the bases of the lung, occur in a few cases but it is remarkable for how many years the efficiency of the heart may be maintained with a pulse rate under 40, the cerebral attacks alone indicating any disturbance of the cardio-vascular functions. ~~The~~ Angina pectoris ~~was~~ has been present in a few recorded cases. The attacks ~~are~~ do here have much in common with the syncopal seizures in Stokes-Adams disease & the pulse may fall to 20 or 30, or they may be the same prolonged period of asystolie

The duration depends upon the cause. The acute myocardial forms are of short duration, but the arterio-sclerotic and ~~&~~ degenerative cases last for from eight to 10 or 12 years, and in the intervals ~~between~~ the cerebral attacks the patient may be very well and able to lead a busy life

II The neurogenous group. ~~The cases~~ Following accident to the cervical spine or caries of the 1st & 2nd vertebrae ~~are rarely recognized~~ Bradycardia is common but cerebral features »

P.T.O.

Diagnosis

There is rarely any difficulty in recognizing the cases a patient seen for the first time in an attack of syncope or ~~of~~ pseudo-apoplexy the slow pulse should suggest the condition, and ~~in~~ neither in uraemia true apoplexy or epilepsy is bradycardia a marked ~~feature~~ ~~present~~. The prompt recovery, and the slight after effects are ~~distinguishing features~~ ~~of the attacks~~ which distinguish the attacks from true epilepsy & apoplexy. There is a large group of borderland cases of bradycardia with occasional vertiginous attacks - ~~forms~~ ~~frustes~~ of the Stokes-Adams ~~disease~~ syndrome. Some of them are very remarkable ~~as~~ ~~in~~ ~~one of them~~ for the ~~great~~ slowness of the heart - which may be present for years ~~with~~ ~~out~~ ~~any~~ ~~other~~ as cerebral ~~features~~ symptoms. ~~In one~~ ~~a~~ In a man of 68 after an attack of pain beneath the sternum & slight vertigo the pulse was noted to be slow and for four years it remained at about 32, the auricular pulse about double as counted in the jugular vein. In the ~~case of senile~~ senile bradycardia with, the pulse below 60, ~~there may be~~ transient vertigo or syncope is not uncommon. In arterio-sclerosis, at any age, vertigo may be an early symptom, but it is not necessarily associated with slow pulse The question of the existence of true epilepsy may arise as in Burnett's case - a naval officer who 16 years previously had had an epileptic attack & then at the age of 46 had bradycardia with ~~slight~~ paroxysms of an epileptiform character. In case 15 of my series a man aged 60 at the age of 48 had a convulsion, and in the twelve years had nine attacks. In the attack in September 1902 the pulse was noted to be very slow. When I saw him in Oct. 1903 he had a pulse of 40, which has been the usual rate for a year

are ~~rare~~ established and
There are only a few well marked cases with
the Stokes-Adams syndrome. With gradual narrowing of
the upper part of the spinal canal, as in the cases of
Halberton, Lepine and Boffard, already referred to,
the condition may be more chronic & recurring attacks
of syncope give a very characteristic picture. In the
cases of meningitis, (chronic & gummous) tumor, abscess
&c, the localizing symptoms due to pressure in that
part are usually present. ~~There cases are very rare, and~~
~~as Eder points out in his collected series, while~~ Eder points out in his collected series, that, while tachycardia is
common, the combination of slow pulse with typical
Stokes-Adams Epileptiform Seizures is established.

(16. a cases here

He had moderate arterio-sclerosis, slight hypertrophy of the heart with a soft diastolic murmur at the base. It is quite possible that the attacks at rare intervals during the twelve years were of the Stokes-Adams character ~~but the~~ and his physician did not think there had been any change in them, meant, though he had never been fortunate enough to see him in one.

Slow pulse may be associated with neurasthenia and there is a group of cases with certain of the features of Stokes-Adams disease. I am not sure that Eder will ~~not~~ know care should come in the group, as the attacks were of great severity, & in one of them she died. The post-mortem examination was negative, but no microscopical examination was made of the and she may have had degeneration of the ~~bundle~~ junctional system. I have reported two cases, both in ~~well marked~~ by men neurasthenia with pulse under 50. One patient age 44 had peculiar swaying attacks with pain in the head - the other had vertigo of a severe character. Both patients recovered. In a third case a man ~~age~~ aged 80, very healthy & strong but excitably neurotic had one Sunday in church a feeling of faintness, so that he had to sit down. ~~He had recurring~~ the attacks recurred for three months - one or two in a week. The pulse was 44; no arterio-sclerosis no ~~trace of~~ involvement of the heart; no jugular pulse could be seen as he was very stout. He was exceedingly neurotic with dermatographia and increased reflexes. For more than a year the pulse rate was under 50. He gradually improved, and upon I heard ~~from him~~ last June 6th 1906, three years after my first ~~see~~ note on the case, he was quite well

Treatment. In the post-febrile cases the patient should be out in bed. Small doses of Iodide of potassium may be helpful, but it is very doubtful if any medicine has an influence in acute myocarditis. With rest, a majority of the cases recover. The Syphilitic cases require thorough treatment. Case 17 recovered rapidly with moderate doses of Iodide of potassium. 2nd any case in a young man who admits of a doubt it is well to give the benefit of the doubt. and a thorough anti-syphilitic treatment. Quinine & arsenic may clear away and leave no damage In the large group of arterio-sclerotic cases ~~are not very amenable to treatment~~ the middle aged men the life should be carefully regulated, moderation in food and drink and exercise, and of the blood pressure is high nitro-glycerine or Sodium nitrite may be used. Iodide of potassium may retard the progress of the sclerosis.

To raise the pulse rate we have no satisfactory remedies The rythm may return to normal for months without any special treatment. Atropin may be tried, hypodermically, a beginning with doses of 1/100 of a grain which if well borne may be increased. Dehio, Selsam & others have reported good results but when once the heart block is established in a man over 70 nothing seems to influence it. Belladonna has been advised, Strychnin may be tried. The patient where I say with Dr Faibourn had great faith in it and attributed the long intervals of freedom from attacks to its use

Digitalis is rarely called for in extremely feeble heart action & rejas of inhalation of the lungs it gave relief

In an attack the usual restoratives measure may be employed. The treatment of syncopal attacks are usually over before anything can be done. A bottle with smelling salts may help to avert an attack. In the prolonged syncope with reduction of the heart beat hypodermic of either a Strychnin slowly electrical stimulation over the heart, Oxygen inhalation may be tried. Nitrite of Amyle does not seem of much service but it may be used when there are pallor & vascular disturbances.

Patients should be encouraged to watch for the earliest symptoms of the cerebral attacks, and attempt to ward them off by a sudden movement or a sharp stimulus to the skin. Blisters over the heart may be used

Lecture 1 & 3 Please return MS with Proof 4-
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"The Lumleian Lectures
on
Angina Pectoris
I and III [almost complete]

delivered at the Royal College of Physicians
London delivered March 10th [& 15th] & 17th 1910

published in The Lancet, 1910. i: pp. 697- [pp. 839-]
and pp. 973-77.

Lecture 68 Please return MS with Proof to
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ANGINA PECTORIS.

The Lumleian Lectures. Delivered before the Royal College of Physicians of London on 15th and 17th March 10th 1910

On

By

WILLIAM OSLER M.D. Oxon & McGill F.R.S.
Regius Professor of Medicine in the University of Oxford.

Lecture I. ~~General Etiology;~~ ~~Classification;~~ ~~Extra cardiac features of Angina.~~ Introduction

Delivered on March 10th

Mr.President and Fellows : -- Twenty five years have passed since I stood here, a much ~~honoured~~ embarrassed junior, as Gulstonian Lecturer. I have always had a keen sense of gratitude to the College for according recognition to a colonial worker, at the ~~very~~ time of life when such an action counts for so much; and I recall the intense pleasure of my colleagues at Montreal, that one of their number had been selected for the honour. The subject of those lectures came within the ken of the younger Fellows, whose work is, or should be, largely in the post-mortem room, and the labor-atory. And now kindly time has moved me among the seniors, and I have to thank you, Sir, for the opportunity to deliver the Course, distinguished among all others of the College, since in these Lumleian Lectures the incomparable Harvey laid the sure foundations of modern experimental medicine.

I make no apology for the subject I have chosen -- Angina Pectoris. In a very special way it is our disease, having been first fully described at this College by the English Celsus, Will-iam Heberden, and in a manner so graphic and complete as to com-pel the admiration and envy of all subsequent writers.

Like books diseases have their destiny. Could Heberden return for a month's busy practice, his surprise would be not less at the new cohorts of disease, than at the disappearance of famil-iar enemies. How staggered he would be at the nomenclature of the College ! And he would be keen to write new commentaries upon old diseases with new names. How the word Appendicitis

Osler 2

~~'Appendicitis'~~ would jar his critical ear, but how rejoiced he would be to see light on that dark malady, "inflammation of the bowels". Living through a century of theory, he died at the out-set of the great awakening in clinical medicine, ~~leaving~~ bequeathing a prec-ious legacy of experience, ~~deeply~~ greatly appreciated by several generat-ions of ~~his successors~~ students, and leaving in this College, a ~~still more~~ prec-ious memory, which it is our delight to cherish.

Looking through the famous Commentaries, one is impressed with the value, with the rariety too, of the old fashioned, plain, objective descroption of disease; and one is impressed also with the great gulf which separates the clinical medicine of today from that of our great-grand-fathers. Page after page of the Comment-aries are as arrid as those of Cullen, or of Boerhaave, and then we light upon an imperishable gem in the brilliant setting of a master workman, ~~and~~ whose Kinship we recognize ~~the kinship of the author~~ with the great of old -- with Hippocrates, with Aretaeus and Sydenham. ~~As such all have regarded~~ Such a clinical gem is the account which ~~he~~ Heberden read at the College, July 21st, 1768, 'of a Disorder of the Breast', to which he gave the name 'Angina Pectoris', based on the study of twenty cases, ~~he subsequently gave a fuller~~ When he incorporated the description in ~~the~~ his Commentaries (written in 1782), ~~based upon more than~~ his experience had extended to one hundred cases.

~~Into~~ Historical details I ~~do not propose to enter~~, have ~~as~~ dealt with ~~them~~ at length elsewhere, but in ~~justice~~ passing one must just mention the predecessors of Heberden, particularly Rougnon, the old ~~distinguished~~ Besançon professor. There is no question as to the nature of the case which he describes; ~~but~~ you can read for your-selves, as through the kindness of Professor Roland, a distinguish-ed successor of Rougnon at Besançon, I am enabled to show, for the first time, I believe, in this country the rare 'LETTRE', pub-lished in March 1768. ~~But~~ Morgagni ~~had~~ preceded Rougnon ~~(1761)~~ as Rougnon antedated Heberden a few months, so did and in his with an excellent report ~~of a case, in which~~ the symptoms ~~are~~ and even ~~still~~ more fully described, including for the first time the

brachial

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brachial numbness and the aortic lesion; and we get ~~still farther~~ back to classical days if we regard ~~to~~ Seneca's ~~description of his own~~ case as a disease, which he calls meditatio mortis, and ~~to~~ the "paradoxon" of Erisistratus, which are regarded as angina. ~~Heberden thinks may have been angina~~.

For more than a century the chief contributions to the path-ology of the disease have been made by members of this Society, and today our Fellows number many of ~~the~~ its best known students, among whom, Sir, you rank primus inter pares. And yet so far as I can ascertain ~~the disease~~ Angina pectoris has never been formally considered in one of the College courses. ~~Moreover,~~ It is too a disease for a senior to discuss, since juniors see it but rarely; indeed, I had reached the Fellowship before I saw a case in ~~H~~hospital or private practice. And then I take it that in this course the College wishes an expres-sion of opinion on some affection to which the lecturer has paid special attention. Circumstances have given me a somewhat unus-ual experience, ~~with angina pectoris~~. The lectures ~~which I gave~~ published in 1907, were based upon a study of the literature, and ~~upon some~~ sixty cases; since then I have seen additional cases, ~~of which I have kept very full notes, and have tried as far as possible to follow the after histories.~~ and I propose to present very largely my own impressions of the disease. ~~I propose to present very largely my own impressions of the disease~~.

Let me ask at the outset, what is angina pectoris ? Who will give an answer to satisfy all of us ? The ~~case~~ subject is full of knotty problems, which lend themselves to speculation. I could wish for a more active scientific imagination, that amid webs of fancy I might entangle and darken the maturer Coun-sels of some of my distinguished auditors. But with neither the brains nor the inclination for such a task, in a more modest flight, I shall consider ~~angina pectoris as~~ it as A disease, character-ized by paroxysmal attacks of pain, pectoral or extra-pectoral, associated with changes in the arterial walls, organic or functional

{ its protean features cannot be understood unless we remember that between the chief parts of this system, the heart and the arteries there is no essential difference.

~~It is~~ Primarily an affection ~~a disease~~ of the arterial system — of the pump and the pipes, the system in which are literally the issues of life and death —, ~~there is no essential difference between the chief parts, between the heart and the arteries,~~ since the arteries are only a long drawn out heart, and the heart but a bulbous expansion of the arteries. A physical unit, and worked as such, it is controlled at every moment by an outside mechanism, an elaborate system of ~~electric wires~~ nerves, which penetrate every part, and even lose themselves in its structures. ~~Of the five tissues which make up the texture of this system, two specially concern us, and demand a few words~~.

The problem before us is the ~~nature of~~ the anginal paroxysm in all its grades, from the trifling sense of sub-sternal distress, to the vascular ictus by which a man is felled as with a club. After a few etiological details I shall briefly discuss clinical types & certain the extra-cardiac features of the disease. In the sec-ond lecture I ~~shall speak of~~ shall consider the pathology, and in the concluding one ~~give my impressions on~~ speak of prognosis and treatment.

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not borne out

General Etiology. Has angina pectoris increased in the community ? Has the high pressure life of modern days made the disease more common ? There is, I think, an impression, particularly among consultants in the United States, that there has been an increase of late years, a view not borne out for this country by available figures in England. In 1908 there were 929 fatal cases in England and Wales, 617 men, 312 women. For the twenty years, 1888 to 1907 the average number of deaths was about 700; in 1905 the number rose above 800, and in 1907 to 942; but the average number of deaths per million living has not materially increased, ranging from 20 to 25, but in 1907 it reached 28. In England the population of the registration districts of England and Wales is about thirty five millions. The statistics for the United States in a registration area, embracing 45 millions of people, show a decidedly greater prevalence of the disease. The total deaths in 1908 were just under three thousand. But the average number of deaths per million of population have not varied much within the past ten years; but it is more than double that of England and Wales, ranging from 66 to 70 per million inhabitants.

It is not a disease for which hospital figures are of much service, and yet it is interesting to compare the larger general hospitals institutions on the two sides of the Atlantic. At the Montreal General Hospital in 10934 admissions for the ten years 1900 to 1909, there were six cases diagnosed as angina pectoris. At the Royal Victoria Hospital, Montreal, among 10510 admissions in ten years in the medical ward, there were 9 cases.

~~At the Massachusetts General Hospital, Boston~~

~~In this country, at the Royal Infirmary for the two years there were medical admissions, and cases.~~

At St.Bartholomew's Hospital in 1907 there were two cases in 2602 medical admissions; in the same year at St.Thomas' in 2261 medical admissions there was only one case. This gives

an

Sick

69

an average of one case a year in the wards of the large general hospitals. The figures at the Johns Hopkins Hospital are scarcely available for comparison, since they embrace a very large number of ~~better class~~ private patients, admitted to the private wards, and even into the public wards ~~a great~~ many of the farmer ~~better~~ class ~~patients~~ are admitted from the country at large.

These figures bear out a remarkable fact, ~~one~~ with which we are all familiar -- that angina pectoris is an affection of the better ~~upper~~ classes, and not often seen except in private practice. During ten years I did not see a case at the Montreal General Hospital, ~~for ten years~~, and only ~~saw~~ one case at the University Hospital, Philad--elphia; and I have no notes of ~~any~~ a case seen at the large Phil--adelphia hospital. It is only as the consultant's work increas--es that he begins to see ~~angina pectoris cases~~ the disease and then a man in active practice may see 10, 15 or more cases in the course of a year. This was about my ~~own~~ average, and I see from the statements of our President, and ~~the~~ late George Balfour of Edin--burgh that this is about the figure reached in the consultant by the consultant with recognized cardio-vascular leanings. ~~I~~ Once ~~had~~ there was the unus--ual experience, ~~in the~~ of eight cases in a month ~~of~~ (May 1899) ~~to see 8 cases~~, three in a house of which died, in the same street, within a short distance of each other; or, to be more accurate, one died on the steps of the Cath--edral, the other two in adjacent houses not far away.

Let me give as briefly as possible my personal statistics, I have notes of cases in all, men women. If we recog--nize as was my custom mild neurotic or pseudo, and a grave organ--ic or true form, there were of the former and of the latter

I have not counted the forms functional unless a case had been followed subsequently several attacks

As Heberden ~~recognized in his original paper~~ women are rarely affected, only three of his hundred cases. ~~Of my total series there were women; but~~ Of the severer form of cases there were only women. On the other hand, of the minor type, of cases there were women. It is somewhat surprising to see that in this country in the registered fatal cases of angina for the past twenty years, the ratio of women to men was 1 to 1.8

5133 women to 9303 men.

Veal

The age incidence ~~as~~ is ~~well recognized is~~ late, the largest number of cases occurring in persons over 50. Of the 612 deaths in England and Wales, only 36 occurred between the ages of 35 and 45; while between 45 and 65 there were 291 deaths In my list the age was much the same. In men there were cases under 40; between 40 and 50 between 50 and 60 between 60 and 80 and cases of persons above 80. In women the age incidence is on the whole a little lower than in men.

~~In the cases of angina major there was obvoius cardio vascular disease in ; in aortic valve lesion; in mitral ; in definite arterio sclerosis.~~

An interesting point in my series relates to the race incidence. Of cases were in Jews. Nowhere in the world are members of this gifted race seen to greater advantage than in the Unites States, where the opportunities of a rapidly grow--ing country give scope to their exceptional genius for business. Living an intense life, absorbed in his work, devoted to his pleasures, passionately devoted to his home, the nervous energy of the Jew is taxed to the uttermost, and his system subjected to that stress and strain which seems a basic factor of so many cases of angina pectoris. Of my list cases were in Jews; males females. It is only fair to state that this high percentage scarcely represents a true state of affairs, since certain circumstances gave me an exceptional clientèle among the Hebrews.

(1) Trans. Amer. Climat. Assoc. Vol 23, pp 111

80

Batty

Incidence.

Occupation.

Angina in Doctors. — A point that stands out prominently in my experience is the ~~high percentage of cases~~ frequency of ~~angina pectoris~~ the disease in our profession, ~~partly no doubt~~ doubtless for the same reason that Sydenham gives for the incidence of gout, '~~that~~ more wise men than fools are afflicted' ~~But~~ angina may almost be called 'Morbus medicorum'. Thirty Three of my cases were in physicians, a larger number than all the other professions put together. Curtin (1) in his study of 60 fatal cases, notes that a fourth were in physicians. This large percentage ~~in my list~~ may in part be attributed to the circumstance ~~in the indicated by my published~~ of the publication of ~~my~~ lectures on the subject in 1897. But the frequency with which ~~distinguished members of the profession have~~ Doctors has become died of the disease ~~is the~~ subject of common remark. From John Hunter onwards a long list of most distinguished men have been its victims. Not to mention the older physicians, among our cotempories ~~may be mentioned~~ was Nothnagel, himself one of the ablest students of the disease, whose last act in life was to ~~write a note on~~ describe his own fatal attack. A tragic interest relates to this ~~last~~ incident in the career of the great Vienna clinician; I do not know that the note has ever been transcribed in English; it reads as follows : -- "Anginal attacks with very severe pains. Pulse in the attack very variable, at one time slow 56 to 60, quite regular, high tension, and then again rapid 80 to 90, tolerably even and regular; then again quite unrythmic, unequal at one time, rapid another, slow with changed tension."

The first sensation of this attack dates three or four years back, at first slight, gradually becoming more pronounced. Very severe attacks with great pain have only come on within the last five or six days. Written on the 6th of July, 1901 late in the evening after three very severe attacks." Within a few hours after this note the end came.

Charcot, the founder of modern neurology, died in an attack in the arms of his friend Strauss, who himself succumbed to the same disease ~~a~~ long after. The distinguished neurologist Joffroy [illegible]

Incidence.

Computation.

~~That~~ did not in Paris last winter. Our much beloved friend & fellow Cullingworth was its victim. and the list could be much extended (~~Transcript on next page~~).

That most brilliant and devoted physician of his generation in the United States, the late William Pepper, died with coronary arteries like pipe-stems. The Provost, indeed the maker of a great University, the very head and front of every important public movement in a city of a million inhabitants, a universally sought consultant, an enthusiastic teacher, a prolific author, in him was incarnate the restless American spirit, which drove him into a premature grave at the height of his career, at the comparatively early age of 55.

Trans page.
be said to favor. Only seven ~~cases~~ were ~~in men~~ above 60, one
~~Considering the frequency of accidental~~
a man of 80 with aortic valve disease. ~~In no case was~~ syphilis
~~a factor~~. The only comparatively young man in the list, 35, was seen nearly 20 years ago in an attack of the greatest severity. Worry and tobacco seem to have been the cause. He has had no attack now for years. Two cases were in the 4th decade, ~~Thirteen~~ ~~Eleven~~ ~~of the cases~~ were in the 5th ~~decade~~ and Eleven in the 6th.

For the purpose of this analysis we may exclude the cases above the age of 60, ~~since~~ after ~~that~~ which age no man, much less a doctor, need apologise for an attack of angina pectoris. Neither alcohol nor syphilis was a factor in any case; of the 26 cases under ~~this age~~ 16 had pronounced arterio sclerosis; five had valvular disease. ~~It has left~~ He a group of 20 men, every one of whom I knew personally, the out-standing feature ~~of whose lives~~ was ~~in~~ the incessant treadmill of practice: and ~~yet~~ that '~~is a~~ badge of all our tribe', ~~and~~ yet if hard work ~~alone~~ alone was responsible ~~for angina pectoris~~, would there ~~would~~ not be a great many more cases? ~~Of~~ Every one of these ~~doctors whom I knew personally, there was in every one~~ men had an added factor, ~~of~~ the worry; in not a single case ~~of a doctor~~ under 50 years of age was this feature absent, except in ~~the case of~~ Dr.G. who had aortic insufficiency, and who had had severe attacks of angina years before, probably in connection with his aortitis. ~~It is interesting to note some of~~ It is also to note the comment which I jotted down the circumstances connected with the onset of ~~the~~ attacks - ~~Dr.B aged 45~~, "A man of great mental and bodily energy, working early and late in a practice ~~of the very~~

~~best~~

I have looked over carefully the notes of the ☐ cases ~~of the doctors on my list~~, to see ~~what~~ if any factors ~~specially~~ could be said to favor. Only seven ~~cases~~ were ~~in men~~ above 60 years of age. one a man of 80 with aortic valve disease. ~~In no case was~~ Considering the frequency of arterio-sclerosis, syphilis ~~a factor~~. The only comparatively young man in the list, 35, was seen nearly 20 years ago in an attack of the greatest sever-ity. Worry and tobacco seem to have been the cause. He has had no attack now for years. Two cases were in the 4th decade, Thirteen ~~Eleven of the cases~~ were in the 5th ~~decade~~ and Eleven in the 6th.

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~~best~~

Occ 10

~~Physicians~~.

sort, involved in speculations in land";—"domestic infelicities";—"worries in the Faculty of Medicine";—troubles with the Trustees of his institution";—"law-suits";—"domestic worries";—and so through the list. ~~In out of the cases of physicians under 60 there was this added factor of special anxiety.~~ At least 6 or 7 men of the 6th decade were carrying loads light enough for the 5th, but too much for a machine with an ever lessening reserve.

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It is a significant fact that in Ogle's well known study "Statistics of Mortality in the Medical Profession" among 3865 deaths, 444 were undefined diseases of the heart and circulatory system — through only 34 deaths were specified as due to angina pectoris. The same dominance of cardio-vascular disease is indicated in the Registrar Generals Report (3 Decennial Supplement - Part II 1908)

2/ ~~Med. Chir. Soc.~~ Transactions of the Royal Medical and Chirurgical Society, Vol. lxix

Clinical Types ~~of Cases.~~

It is interesting to look over a long series of some one affection, with a view to classification. Angina Pectoris offers notorious difficulties, and I do not suppose there are any two of us who would agree, ~~fully. not even upon the primary point -- whether the better classification was symptomatic or etiological~~.

As far as symptoms are concerned ~~the~~ my cases fall into three groups : ~~(1) Les formes frustes~~ ; (2) mild; (3) severe

I. 1. The mildest. ~~A mild~~ form; "les formes frustes" of the French. — Sub-sternal tension, uneasiness, distress, rising gradually to pos-itive pain, ~~is~~ a not infrequent complaint, one indeed from which few of us escape, ~~and~~ it is associated with three conditions Emotion ~~disturbances are generally~~ is the most common and the least serious cause. How often does it happen ~~to a man when he~~ on the get up to speak, or ~~as he~~ when begins to read a paper, that ~~he~~ a man experiences a sense of tension just beneath the breast bone, a curious indes-cribable ~~sort of~~ feeling, not of pain, yet sometimes working to a degree of uneasiness, that is only releived by firm pressure. The slight palor ~~often associated with it~~ associated, indicates a vaso-motor disturbance which may increase, and a man may have to stop speak-ing, and indeed I have known instances in which ~~the person had~~ has occurred, fainting. In one of my physician-patients, a well known author, the attacks of true angina began in this way; while lecturing he would ~~have~~ experience a feeling of sub-sternal tension ~~in the region of the heart,~~ and for years had nothing else, and had it under no other circumstances. He could play golf and ~~ride~~, and do an extraordinary amount of work without any uneasiness.

Only ~~one~~ a single action may bring it on. Dr.B. could lecture and hold his clinic without experiencing any difficulty, but if he read a paper before the Medical ~~School~~ Society, or if he gave an address in public, the sub-sternal tension was certain to come on. In this form the condition is very transient; while

~~sometimes~~

Cuff 40. 12

sometimes a danger signal, in many cases it may be disregarded altogether.

Not so the second form, in which this sub-sternal distress is associated only with muscular effort;— the slightest ascent; ~~an~~ extra round of golf, ~~or~~ a sudden hurrying, as to catch a train ~~This is~~ Much more frequently the precursor of ~~attacks~~ of angina, ~~But~~ it is remarkable how long a person may have slight attacks without aggravation, ~~from year to year, indeed without ever having a severe attack form~~. In a tranquil life the individual is perfectly cpmfortable; as old Dr.K. of Philadelphia used to say to me : -- "I can stand anything in life but a hill or a stair" A Mr.W. could walk a mile from his home to his office, but for several years he could not walk back on account of the slight up-grade; he never had an attack of angina, though he died of myocarditis and a dilated heart. In ~~both~~ these emotional and muscular types of the "formes frustes", the condition is usually transient.

But there is a third variety, ~~which may be called~~ the high pressure form, in which day after day, for weeks or months, the individual may never be free from a sense of tension beneath the breast bone. It is not pain; it has no accurate localization except that it is directly sub-sternal; there is no radiation; it is not increased by emotion, or by exertion, but ~~it certainly~~ obtrudes itself into ~~the~~ consciousness as an unpleasant reminder, ~~and~~ it means just one thing -- that the machine is being driven at too high a speed. The General Manager of one of the Railways ~~roads~~ in the Southern States, used to call it his 'hot box', i.e. his 'hot axle'. It is met with in men who are burning the candle at both ends, working hard at business, or in a profession, and at the same time treading the "primrose path." It is not always of sufficient severity to cause the patient to consult a phys-ician. ~~I have known~~ The Sunday rest may be cause of ~~invariably associated with~~ its disappearance. ~~It is~~ Not always a high pressure affair alone, ~~but~~ it is ~~associated with~~ aggravated by worries, particularly the

possibility

possibility of not carrying through some big scheme, or the onset of a financial crisis. With the harness off it may disappear completely. One man writes : -- "The second day out, from New York I am free, not the slightest sensation of my enemy". In looking up the history of these cases, in three only did ~~attacks of~~ severe angina follow. I have not included these cases in my list unless there were other features, such as a definite paroxysmal attack. It is only occasionally severe enough to make a patient seek advice. It is significant that of five cases of which I have notes of the blood pressure, in all it was above 180, and in one 230.

2. The mild forms.

~~II.~~ Under the mild form, Angina Minor come ☐ cases of my series. I have grouped under these the neurotic, ~~hysterical~~ vaso-motor and toxic forms, the varieties which we used to speak of as false or pseudo-angina, a term ~~in~~ which I agree with Gibson & others is best given up, since, as I hope to show in the next lecture, the basic features of all forms are identical. Still, it is a very useful ~~for the patient with this form to retain terms which are reassuring.~~ exotic term, a comfort to the patient and his friends. The special features of this variety are ~~of~~ the greater frequency in women, the milder character of the attacks, and the hopeful out-look.

~~III.~~ 3. Severe angina, angina major. This group is represented in my series by ☐ cases, of which ☐ were in men.

The two special features here are the existence of organic change in the ~~aorta or~~ arteries, in a large proportion of all cases, ~~the cases. And secondly,~~ and the liability to sudden death. It is ~~very difficult to group cases on the~~ not easy nor is it wise to class cases by symptoms alone, but all the same there is an interest in so doing and ~~my~~ patients in my list may be divided into four groups : --

A. Cases in which death ~~has~~ occurred in the first or second attack, or in connection with a series of rapidly recurring attacks - the so-called status anginosus . We do not know how many instances of sudden death in the street, or in bed at night ~~may~~ are ~~be~~ due to angina pectoris, but only ☐ cases in my series died in

in the first attack. The mode of death is not always the same. In certain cases it is the most rapid we see, without warning, or after a few minutes of unpleasant sub-sternal sensation, or possibly in some act, combining intense emotion with muscular effort, there is a rapid change, a sudden unconsciousness, a stony stare, a slight change in the facial axpression, and then with two or three gasps, all is over; no pulse to be felt at the wrist; respiration stops; but even when the patient is apparently dead, a feeble heart impulse may be felt, or faint heart sounds heard.

B. The patients have had a series of characteristic attacks ranging from two or three to scores, during the course of ~~from~~ a few months ~~or~~ a year or more, and in a severe ~~one~~ paroxysm, or in a ser--ies death occurs. The final event has not the same suddenness, nor is there rapid loss of consciousness; the patient may ind--eed be moribund, and ~~not~~ quite conscious, though this is unusual. The mode of dying in these cases is very remarkable. In a number of instances I have made careful notes. Two are worth quoting.

Fol.

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~~Mode of death in Angina~~.

On Thursday May 25th, 1899, while at work in the ward ~~engaged in a practical examination,~~ Dr.Knox called me to see ~~said there was~~ a patient in an attack of angina. ~~in a small ward~~. I found ~~there~~ a man aged 41, who had been admitted the previous day, complaining of pain in the heart. He had been a heavy worker, a large eater, had not had syphilis. Five years ago while rowing, he had an attack of pain and short--ness of breath, which lasted for a few minutes. On and off since then similar attacks have occured, always brought on by exertion, now even by very slight effort. He had aortic insuff--iciency, and a very soft low tension pulse. About 9.30 a.m. his hands and feet had become cold and a little cyanosed, and he had a slight attack. It continued on and off all the morning.
I saw him at five minutes past 12, he was propped up in bed moan--ing with pain, but was not sweating; the pulse was soft, regular and feeble -- 100 to the minute, the left smaller than the right. Everywhere over the chest in front and back were medium sized rales; the pulmonary resonance reached almost to the costal border on the right side, and the superficial cardiac flatness was completely obliterated; there was a soft apex systolic murmer, and a soft diastolic aortic heard along the sternal border.
At 12.15 he had a sudden collapse, became pulseless, the features set, and he gave one or two gasping respirations, which recurred at intervals of about five minutes. No pulse could be felt in carotids or brachials. Remembering the remarkable case reported by Sloan, I performed cardio puncture, threading a long thin aspir--ator needle into the heart through the fourth right inter-space. This was foll--owed at once by one or two faint inspirations; the needle showed a cardiac impulse very plainly, beating 52 to the minute. At 12.25 the needle was moving much more slowly and more feebly - 44 to the minute. A saline injection was made directly into ~~the~~ a vein. At 12.28 the cardiac beats as shown by the needle were still regular -- 32 to the minute, without any tremor in the inter--val, such as might be given by fribrillation ~~or tremor~~. At 12.37 the excursion of the needle was a little stronger. No heart ~~sounds~~ Normal

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sounds could be heard; no pulsation in the veins of the neck. At 12.44 I injected a tenth of a grain of strychnine directly into the wall of the left ventricle. The needle in the right fourth inter-space continued to show definite movements, grad--ually getting feebler, and stopped at five minutes past one, 50 minutes from the onset of the collapse, and exactly 45 minutes from the last inspiratory gasp.

On Nov. 4th, 1901, I was sent for hurriedly this morning to see ~~Mr. J. Bottle Lee.~~ aged 57, a stout healthy looking man, whom I have known for some years, and have seen at intervals. As I entered the room at 8.15 the patient apparently was in articulo-mortis; indeed I thought he was dead. The eyes were fixed, the pupils dilated, the face of an ashy color, and he was not breathing. Seeing my startled look, Dr. Atkinson, who was just preparing a hypodermic injection of ether, said, "It is all right; he will come to; he has had four such attacks in the night." There was no pulse in either radial, but listening over the heart one could hear feeble distant heart sounds. In about a minute (it seemed to me longer) the patient began to breathe; in- and expiration ~~was~~ were somewhat noisy and deep, and accompanied everywhere with loud bronchial rales. He did not recover consciousness. He became more livid in the hands and face, and the pupils became contracted. The pulse could be felt, small at first, but it then became of much better volume and ranged from 56 to 68. In the course of ten minutes the breathing became less labored, his color improved and lost the ashy look, but he did not regain consciousness. The heart sounds could be well heard; the pulse was full and soft, 62. ~~When I returned~~ At 11.15 the patient ~~had just~~ died in another attack. He had not regained consciousness. ~~He had had his first attack of angina on the 2nd November.~~

The patient had been a very healthy man, of fairly good habits. He was short and stout, but he had very rarely had to consult a physician. On the 2nd of November he went to the races and seemed very well. On that evening he had a very severe attack of pain in the region of the heart, shooting down the arm. He did not call his relatives, but one of the servants of the house found him in an attack of evidently very great severity. On the following day (Sun-

C. A chronic form, represented in my series by F1 cases, all of which were characterized by frequent recurring attacks over a ~~long~~ period ~~of~~ of more than 10 years. John Hunter, you remember had had his first seizure in 1773 20 years before his death, and he had many in the intervals. One special feature of this form is the frequency with which certain special actions are associated with the attacks. A patient may be perfectly comfortable and remain free, if he leads a tranquil life with little or no muscular effort; a slight hill, the act of dressing himself, may be sufficient to bring on an attack; or in another patient an indiscretion in diet. This is a form with which the patient may feel comfortable for a great many years. I have had several friends, two of them medical men, who have man-aged very comfortably for more than ten years in spite of the liability to attacks.

On the other hand they may be among the most distressing cases we see. ~~Number~~ a Mrs D. of Wilmington lived a life of martyrdom for more than ten years; ~~Mr. was a perfect martyr to attacks for more than twelve years, and finally died in one.~~ Emotion, cold, exercise, eating would bring on the attacks & his existence was a burden - not a week passed without an attack. He was thought to be neurotic & hysterical though a man of 60. He had remarkable Raynaud's disease of the fingers in the attacks, and

D. A group of cases, not large I am sorry to say, comprising only in my series, in which after attacks of great severity, recurring for months, or for as long as two years, complete recov-ery takes place. These are cases I shall deal with more fully in speaking of prognosis.

On several occasions became unconscious. He Hunter himself about and is in intense distress during the paroxysm. I saw him in an attack and felt sure the condition was serious. The left radial pulse became very much smaller than the right. He died suddenly in an attack after nearly eleven years of suffering. Both coronary arteries were calcified

H1.

Oct 19

[Extra pectoral forms.] Angina pectoris is an affection of the arteries. The studies of Nothnagel in 1867 on the vaso-motor phenomena of the attacks, widened enormously our conception of the nature of the s disease, and we have come more and more to regard the symptoms of the attack as an expression of a vascular crisis, to use ~~an~~ the apt term introduced by James Collier. I shall try in the next lect-ure to discuss the ~~various forms and manifestations~~ disease from this point of view. Meanwhile ~~it~~ here may most conveniently be consid-ered the certain extra-pectoral, or more properly speaking, ~~the~~ extra-cardiac features ~~of the disease~~, which have a direct bear-ing upon our conception of its ~~etiology~~ pathology. Following this wider conception it is interesting to note in the literature the use of such terms as 'angina abdominis', 'angina cruris', 'angina brach-ialis'. In looking over my list I find a considerable number of instances in which prominent features of the disease were extra-pectoral or there were symptoms suggestive of vascular disturbance in distant parts.

It is difficult to make a classification of the symptoms ~~of them~~, and certainly one cannot ~~always~~ take for granted that they were always due to vascular crises. But I may roughly group the cases into those with peripheral, abdom-inal, pulmonary and cerebral features.

A. ~~In~~ It was Heberden who first recognized that the patient could die from angina pectoris without any pain in his chest.

~~Extra-Pectoral Angina~~.

Our conception of the nature of the disease was enor-
-mously widened by the studies of Nothnagel in 1867, in a paper
in which he laid special stress upon the general vascular, i.e.
vaso-motor phenomena of the disease. ~~But it was Heberden who
first recognized that the symptoms could be entirely extra-
-pectoral~~. In his Commentaries he describes the case of a man
aged 60, who began to feel, while walking, an uneasy sensation
in the left arm, never while in a carriage. After continuing
for ten years, it would come upon him two or three times a week
at night, and he would have to sit up for an hour or two. In
all other respects he was healthy and strong, and he never had
a pain in the chest. Then he added : -- "This disorder, its
seat excepted, perfectly resembled the angina pectoris, grad-
-ually increasing in the same manner, and being both excited
and releived by all the same causes". He died suddenly with-
-out a groan at the age of 75." In Lord Clarendon's case as noted[3]

Four cases in my series ~~were of~~ presented in some degree this brachial ~~type~~ peculiarity
In L.N.H. aged 58, the pain began in the middle of both fore-
-arms; when walking he would be warned at once of the onset by
sharp pains appearing simultaneously about the middle of both
arms; if he stopped to look at a window the pain would dis-
-appear, if he attempted to proceed ~~the pain~~ it would increase in
severity, and he would begin to feel faint; sometimes then the
pain would extend to the chest. The first occasion on which
I saw him the pain was entirely in ~~his~~ arms, there was no cramp,
and he pointed to a position about the centre of each fore-arm.
There was moderate sclerosis of the brachial and radial arteries.

In Mr.D aged 42, the pain always began in the left elbow
where it would sometimes stay, though more frequently it extend-
-ed up the arm to the heart.

Dr.M.C.G., aged 64, insisted that the pain which "pulled him up
short" on exertion was in the elbow, or rather at a point two

inches

Nothnagel in his famous book on Diseases of the Heart, Lyon in the fatal attack 92.

inches above it, in the biceps muscle itself. So severe would it sometimes be that he would turn pale and sweat. He subseq--uently died in an attack.

In three instances, the chief symptom was at first in the legs. My distinguished friend Dr.W.W.J., for many years the leading physician of ~~the capital of the United States~~ Washington D.C., at the onset of the attacks had remarkable pains, with numbness in the left leg; there were no cramps, but the pains were sometimes intense, and he called it his 'Signal Symptom'. In a ~~one~~ letter ~~which he wrote~~ containing a very accurate analysis of his attack he says that the painful sensations in the left leg seemed to initiate the out-burst, though sometimes the pains remained limited to the leg.

~~The case of~~ In F.L. aged 58, whom I saw in many attacks, some of ~~the greatest~~ maximum severity; they began with pains in the legs. I never saw a patient so drenched with sweat in the paroxysm, he was literally dripping, and could not have been ~~much~~ more soaked had a hose been turned upon him. As he expressed it, he did not know which caused him the greater trouble, the painful cramps in the legs, or the pain in the chest. He had indeed typical features of intermittent claudic--ation, as the pain, sometimes with, sometimes without actual cramp in the muscle, would pull him up short in the street.

It is a noteworthy circumstance ~~is the fact~~ that all the ~~accompanying~~ vasomotor phenomena, even to faintings may be associated with the pain. Colonel E. aged 66, had agonizing attacks of pain without cramp in the left leg, in the first of which he turned pale and fainted. The true nature of the attacks was not recognized until he began to have substernal pain and angina pectoris, in an attack of which he died.

I ~~happened to see~~ witnessed a remarkable attack in which the pain was limited to the right pectoral muscle. The man, ~~was~~ aged 55, ~~and~~ when shown into my consulting-room had an ashen grey colour, and looked faint. He said at once : -- "Doctor, I am in an attack".

Though

Though his pulse was 172, and he looked faint ~~and~~ & was sweating, he ~~would not lie down, but~~ preferred to walk about. ~~I must say~~ I was ~~very~~ apprehensive least he ~~might~~ should drop dead on the spot. He pointed to and grasped the right pectoral fold, repeating the words,"Here is all my trouble". He had had attacks of great severity for four years. The pain always began in the right pec--toral muscle, and sometimes stayed there, but if very severe went down the right arm. In the attack in which I saw him the skin was ~~not~~ hypersensitive; there were no tender spots anywhere, but the muscle itself was very sensitive, he winced at once when it was touched; ~~he said~~ It would remain sore sometimes for hours after the attack had passed off.

Pain in the testicle sometimes with swelling is mentioned by one or two writers as an occasional feature during the attack. In the case of our late colleague, Dr.C. the pain was sometimes very severe in this region, and the attack would even begin there. It is possible that the pain may be limited to the testis, at any rate the following is a very suspicious case. A man aged 56, while speaking at a meeting was seized with an agonizing pain in the left testis, and became pale and faint; there was no swelling, no tenderness, no radiat--ion of the pain, but his condition must have been very serious, since the doctor did not think he would survive. He had attacks at intervals of every two or three months. Four days before I saw him he had a very severe paroxysm, in which he became faint and sweated, and for the first time had a sense of tension and distress just below the ensiform cartilage. He was extremely feeble and collapsed, and the attack lasted for 12 hours. He had slight arterio sclerosis, with accentuation of the aortic second sound.

In none of these cases were the features those of intermittent claudication, angina cruris, as Watson terms it, which has close analogies with angina pectoris, particularly its paroxysmal character, the pain, which is not necessarily associated with cramp, and the cessation when the patient comes to rest. In a syphilitic woman aged 37 admitted March 7th 1900, with severe angina in the attack in December the left foot and leg became oedematous and painful. The arteries & veins of the limb were normal

B. Angina abdominis. That angina attacks may begin in the abdomen has long been recognized. ~~And~~ Several writers have called attention to the similarity of the gastric crisis of locomotor ataxia to angina. In my series there have been three groups of cases with abdominal symptoms. An important form is met with in nervous and hysterical patients with the combination of throbbing, tender & mobile abdominal aorta and recurring crises of gastric pain. The pains may radiate to the chest or gastric and thoracic crises may alternate as in an extraordinary case in a lad of 17 - 'a bundle of nerves!' - who nearly died in the paroxysms. The extreme tenderness of the aorta in some of these cases led Potain to suggest the existence of aortitis, while the radiation of the pain &c has given the term syndrome solaire to the group of symptoms.

In some ten or twelve cases in men of middle age the usual symptoms at first were abdominal, and the true nature was not suspected. In many cases the attack starts in the upper abdomen. As Mrs C. expressed it "a wave starts here" pointing to his stomach "and passes up with a feeling of fright and when it gets beneath the breast bone it cuts me short as though the machinery of life had stopped". In my lectures I have reported several cases of the pseudo-gastralgic type as Huchard calls it, but in reality Leared in 1867 first called attention to these disguised cases. The difficulties in diagnosis may be very great, particularly in the form which resembles the tabetic crisis. A Mrs P. aged 58 came Feb. 11th 1897 with abdominal attacks of cramp-like pains in the upper abdomen passing to the back in which he became completely prostrated & sweated & vomited, & only Morphia gave relief. The pains began just under the ensiform cartilage but never ascended. The had not had syphilis. The knee-jerks were normal present, the pupils were normal. The had aortic insufficiency and sclerotic arteries. There was no lead-line. The was a very healthy, robust man, only every month or five weeks he would be prostrated in an attack, & in one of which Dec. 20 1899 he died. That case was never a thoracic symptom, and it was only difficult to decide the nature of the attacks. In three other instances cases in the same gastralgia had been diagnosed, in one the malarial form, but the character of the attacks altered and left no real doubt as to the nature of the trouble.

And lastly I have a group of three cases in which typical attacks of angina pectoris of the most typical form were complicated with abdominal pains, like gall stone colic, and jaundice. The combination may be quite accidental but abstracts of the cases are worth recording:-

~~Abdominal Pain simulating Gall-Stones.~~

Morph

Captain M. ~~case~~ aged 60, seen Jan.13th 1897, had had in 1890 ~~well marked~~ attacks of angina pectoris of ~~a~~ the most charac-teristic nature. In 1893 he had ~~an attack of severe~~ pain in the region of the liver, with jaundice; this recurred at intervals, and he was operated upon by Mr.Mayo Robson, at Leeds May 1895, but no Gall-stones were found. He consulted me for pain in the abdomen, ~~just~~ crossing from one side of the costal ~~aortic~~ arch to the other, like a band or constriction; at times it became very aggravated. Food made no difference, and there was no tenderness on pressure, and no enlargement of the liver. While more or less constant, the abdominal pain comes on in spells, and sometimes makes him feel faint and sick at the stomach.

~~In another case no.~~ Mr.A.W., seen April 4th 1903, aged 59, in the ~~his~~ first attack of angina 4 years ago, ~~he~~ had ~~also~~ pains in the abdomen of great severity, and he was jaundiced after the attack. It was supposed to be gall-stones. Four months ago he had a very bad night, with attacks of pain in the chest, and much discomfort in the epigastrium; on the following day he was jaundiced. The curious thing was that he could not differentiate the pain in this epig-astric attack, from the ~~f~~urious seizures of definite angina, in many of which I saw him during the six weeks that he was in hospit-al. He died in an attack of angina some months later

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~~Jaundice~~.

~~The case of~~ Dr. C~~ary~~ T~~homas~~ aged 64 ~~no.~~ after a day or two of indigestion and irregular pains, ~~he~~ had on Oct. 27th a severe attack of pain in the chest, with extension into the arm, evidently of great severity, ~~this was on Oct.27th~~; On the 30th the pain was more abdominal, and he was very sensitive over the region of the gall bladder; on Nov.1st and 2nd the pain was abdominal, and tenderness marked over the gall bladder, and he had become jaun--diced. This relieved our minds, as we were afraid from the character of the early attacks that it was angina. By Nov.9th he was very much better, and the pains had almost disappeared, and at six o'clock when I saw him he seemed nearly well; but at 8 o'clock while his son and the nurse were in the room, he gave one or two short, quick, ~~sighing~~, inspirations, his head dropped on his chest and he died instantly.

C. Respiratory features of angina:— The pulmonary symptoms of the attack have been carefully studied by many observers. A man may die of angina without any ~~discernible~~ change in the respiratory function, other than abrupt cessation; indeed the death may be at the medulla, so suddenly does respiration cease, even for nearly an hour before the heart ceases to beat. Ordinary cardiac asthma is a common symptom — the orthopnoea, the light-cyanosis, the feeble pulse of myocardial weakness. Cheyne-Stokes breathing is not infrequent, and in the status anginosus may be present for weeks. But there is another type much more characteristic, and quite unlike the ordinary cardiac asthma: ~~In the first place~~ it is paroxysmal, occurring abruptly, often at night, ~~usually~~ it is not associated necessarily with signs of myocardial weakness; it is accompanied with very high tension; it may alternate with attacks of angina or come on in one, and sometimes bears the ~~features~~ stamp of acute edema of the lungs.

Fourthly, increased blood pressure, rising to 250 mm & over (Riva-Rocci) 99
In one case (Dr J.H.K.) the record was 340 mm during an attack - in the intervals it was 240. On three occasions he brought up large quantities of a clear fluid, ~~Respiratory Features.~~ ~~sometimes blood, & then~~ with blood.

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Cardiac asthma, as it is called, is a common enough feat-
-ure of the anginal attack, and it is usually associated with
myocardial weakness, and gallop-rythme, or embryocardia. But
there is another condition also quite common, which presents all
the features of acute pulmonary oedema, and it has been likened
by Goodhart to an acute bronchitis, and by Huchard to acute
emphysema. We have usually regarded this as an indication of
cardiac weakness, but this is not always present, and there are
features about the attacks quite unlike the ordinary dyspnoea,
such as we see every day in cardiac cases, in which it is common
enough to have slight infiltration of the bases.

There are
~~But this is a state characterized by three~~ four special features.-
First, the universal distension of the lungs ~~and~~ in an acute emphysema;
the ~~ex~~spiratory excursion is limited; expiration is prolonged;
in one patient the chest even looked larger; ~~and~~ and the increase
in the volume of the lungs may be demonstrated by percussion,
The condition is
~~it corresponds exactly with~~ what von Basch has called 'lungen-
schwellung', and 'lungen^starrheit', a state which he believes
to be due to distension of the capillary net-work, with swelling
of the alveolar walls.

Secondly
~~The second prominent feature is~~ the rapid onset of the physical
signs, like those of an acute attack of bronchial asthma,- wheezing
fine bubbling rales and prolonged expiration. within ten minutes
the attack may be in full swing
And thirdly, ~~in a certain number of attacks~~ acute oedema
may
of the lungs follows, indicated by a great increase in the bub-
-bling rales, and the rapid expectoration of large quantities
a thin sometimes
of frothy, blood tinged liquid. The attacks may be transient,
lasting only for a few hours, and give a very special pulmonary
stamp to the attack.

In May 1899, I saw on several occasions with Dr.Atkinson,
Mr.G aged 65, who had had his frist and very characteristic
attack while walking up a hill on April 27th. It was probably
an attack associated with acute infarct of the ventricle, as the
pericardial rub was detected the next day. ON the first
occasion

will 2 f

occasion I saw him he was propped up in bed, wheezing audibly, expiration was prolonged, and cardiac flatness was obliterated. The pulmonary resonance on the right side extended to the costal margin. He was coughing and bringing up a considerable quantity of frothy, liquid expectoration. The pulse was full, regular -- 100; and of high tension the heart sounds were muffled and obscure; he had at the time no pain, but this acute condition of emphysema had followed the attack in the morning; within a few hours it had disappeared, and Dr.Atkinson thought that there was a ~~very~~ definite reduction ~~difference~~ between the lower ~~percussion~~ limits of the lungs.

~~Several cases of this acute pulmonary~~ The condition may be ~~have been~~ associated as just mentioned with extraordinarily high tension. A man aged 43 was admitted to Ward C. Nov.17th,1900, complaining of shortness of breath, and attacks of sub-sternal pain. He weighed 190 lbs, was a very heavy eater, and had not had syphilis; the blood vess--els were sclerotic; he had loud aortic second sound; the blood pressure was very high. I saw him in an attack of pain on Decem--ber 11th; he was not cyanotic, the pulse was regular; very high tension; the heart sounds were clear, loud, and sharp; he then turned pale and sweated, and the pulse at the wrist became almost imperceptible. He began to wheeze, and in a few minutes one heard on auscultation high pitched sibilant rales, mixed with fine crepitation. These were very intense, and sounded close to the ear, suggesting at first a friction rub; the percussion note over the lungs became hyper-resonant, and on the right side reached almost to the sternal margin. A hypodermic of morphia releived his pain. The hyper-resonant condition of the lungs persisted for two days; a ramarkable change in his facial expression occur--red, as after the attack he had for days retraction of the upper eye-lid.

A Mr.C. aged 62, who had very characteristic attacks of angina pectoris, had several severe but transient pulmonary attacks in one of which he had hoemoptosis.

One of the most remarkable cases was a coloured woman aged

Sulli 30 25 101

aged 54, who was in the hospital for several weeks, and who died in an attack Jan.28th,1897. She would wake at night from a sound sleep with pain in the region of the heart, and in five minutes she would have urgent dyspnoea, noisy respiration with coarse rales everywhere over the chest. A hypodermic of morphia and atropia would quiet her within an hour or two. She was under observation on and off for more than a year, and she had scores of the pulmon--ary attacks, sometimes with pain, but very frequently without. In the severer attacks she would have strong tonic contractions of her fingers and hands. We often discussed the character of this paroxysm, as it was suggested that she might have had asthma prev--iously. In the suddenness of the onset, and the rapidity with which the attacks came on, the limited duration and prolonged expiration suggested bronchial asthma. She did not always have a cough, and rarely had expectoration.

(One case in the series had ~~eight~~ indications of consolidation of ~~the~~ lower lobe of one lung in connection with ~~the~~ an attack.

and Curiously enough while preparing this lecture, Dr T. McCrae knowing my interest in the subject sent note of a ~~remarkable~~ case of man aged 35 who died ~~suddenly~~ of angina, ~~which had~~ ~~come on suddenly three weeks before~~. The attacks yielded promptly to amyl-nitrite but in the last ~~attack~~ one there were acute ~~fatal~~ pulmonary symptoms for 24 hours, oppression, cough, &c, and ~~scattered~~ areas of consolidation with tubular breathing and ~~rales~~

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Respiratory Features.

The case of the Rev.Mr.B aged 66, there are what he calls impulsive long breaths like the deep inspiration of a child at the end of a sobbing fit; after going to bed it recurrs almost every night two or three times, coming as quick as a flash so that he could not check it. He occassionally has it through the day; it is always worse after his angina attacks

Colonel Gaither.

Vide. A case with extraordinary respiratory features was One of the most interesting cases of angina I ever studied was the late Captain H., whom I frequently saw with Dr.McCormick, he was a man of extraordinary vigour and health, aged 71, and of great intelligence, and who, as is so often the way, he had as is not uncommon studied his case most closely. For years he has had to be very careful in doing all the small actions which necessitated stooping, as in tying his shoes, or in getting into his bath tub, as he would experience such intense pressure in the chest which would render him immobile for a moment or two. Then he had a second variety, which corresponded to ordinary severe attacks of angina, terrible paroxysms of great severity. And then thirdly he had respiratory attacks, in which waking from in a sound sleep he would gasp for breath, as if every one breath would be his last, and then he would choke and begin to cough; the respir--ation became wheezing, and Dr McCormick who had seen him in several, said that the throbbing rales came everywhere, over the whole chest, just as in a severe attack of asthma; then he would cough, and in from ten to fifteen minutes he would bring up large quantities of frothy, sometimes blood stained expectoration, as much as a large teacupful. He died in an attack of angina.

Respiratory Features.

The case of the Rev.Mr.B aged 80; there are what is called impulsive long breaths like the deep inspiration of a child at the end of a sobbing fit; also going to bed it requires almost every night two or three times, opening as quick as a flash so that he could not check it. He occasionally has it through the day: it is always worse after his angina attacks

Colonel Gartner.

One of the most interesting cases of angina I ever studied was one Captain H. whom I frequently saw with Dr.McCormick. He was a man of extraordinary vigour and health, aged 71, and of great intelligence, and as he was the subject studied his case most closely. For years he has had to be very careful in doing all the small actions which necessitate stooping, as in tying his shoes, or in getting into his bath tub, as he would experience such intense pressure in the chest which would render him immobile for a moment or two. Then he had a second variety, which corresponded to ordinary severe attacks of angina, terrible paroxysms of great severity. And then finally he had respiratory attacks, in which waking in a sound sleep he would gasp for breath, as if every one would be his last, and then he would choke and begin to cough; the respiration became wheezing, and he would turn quite blue; the several, and the spasms rales came everywhere, over the whole chest. Just as in a severe attack of asthma; then he would cough up from ten to fifteen minutes would bring up large quantities of frothy, sometimes blood stained expectoration., as much as a large teacupful. He died in an attack of angina.

D. Cerebral features. Unconsciousness may occur during an attack. Epilepsy believed by Trousseau to be closely related to angina occurred in two cases, in neither in direct connection with the paroxysm, Certain of the reported cases may have been the Stokes-Adams disease in which the ~~attack~~ Epileptiform attacks are sometimes preceded by pain about the heart.
In only three cases ~~did~~ transient cerebral symptoms occurred during ~~the~~ attacks. ~~Mr~~ S. aged 51 had had for three years occasional ~~attacks of paroxysms~~ of angina. On ~~May~~ September 20 1901 while in a seizure he had transient numbness of the left hand & foot & side of the face. The left leg dragged. These symptoms disappeared in the course of the day but he complained of his eyesight & was found to have lateral hemianopia. The condition resembled closely the transient cerebral attacks so common in arterio-sclerosis

I have dwelt upon these extra-cardiac features ~~of the disease~~ with a special object, as they throw light upon the essential nature of the disease, which I propose to discuss in the next lecture

Recurrent ~~case of~~ Aphasia is a rare complication. ~~occurred during the attacks in the~~
~~case of~~ B, aged 63 seen with Dr H Jan 14. 1900. He had had angina on & off for five years. In four attacks he has had transient aphasia without losing consciousness. In the recent attack he was speechless for an hour and on the eight hours passed before he could say a word. Dr McKenzie said that there was no trace of paralysis and that he could understand everything and write. He had wide spread sclerosis of the vessels. He died in an attack.
A remarkable feature noted in the case of Mr M, who in the attacks had an intense pain at the back of the head, inside he insisted, and he would hold his head between the hands to avoid pain in movement. Landois

~~2nd~~ S. aged 31 admitted Feb. 21st. 1898, with paroxysms of severe angina which have occurred for several years, usually following exertion. Five attacks occurred in the month before admission, ~~He has been~~ One with unconsciousness. He had not had syphilis nor is there heart disease. He has had on several occasions temporary loss of power in the left hand with numbness. In the paroxysm just before admission, which was of great intensity the left arm and leg were paralysed ~~and~~ for two days. The face was not involved. The

Jan.

THE LUMLEIAN LECTURES.
on
A N G I N A P E C T O R I S .

Delivered before the Royal College of Physicians of London.

By W I L L I A M O S L E R M.D., F.R.S.
Regius Professor of Medicine in the University of Oxford,

Lecture iii.

Delivered on March 17th.

Prognosis and Treatment.

~~To no disease is the~~ well ~~known~~ introduction ~~of Hippocrates to the~~ to ~~the~~ The ~~Book of~~ 'Prognostics' ~~more applicable than to~~ fits angina pect-oris. A very excellent thing is it indeed, he says for the physician ~~as he says,~~ to cultivate prognostics, and nothing so much inspires confidence as the power of fore-seeing and foretelling, in the presence of the sick, the present, the past and the future, and he will indeed manage the cure best who has foreseen what is to happen. And ~~then he goes on~~ almost as if he had this very dis-ease in view, he adds: -- "For it is impossible to make all the sick well; this, indeed, would have been better than to be able to foretell what is going to happen; but since men die, some even before call-ing the physician, from the violence of the disease, and some die immediately after calling him, having lived perhaps only one day, or a little longer, and before the physician could bring his art to counteract the disease, it therefore becomes necessary to know the nature of such affection".

The essence of prognosis ~~in angina pectoris.~~ lies in rec-ognizing, as Hippocrates says, 'the nature of affection'. And yet the thought must ~~occur to us that it is~~ arise in us that futile to discuss the ~~prognosis~~ future of a disease, ~~which~~ in so large a number of cases ~~is most~~ aptly described in Seneca's words as 'Meditatio Mortis'. (over)

It takes courage to make a prognosis. Fullness of know-ledge does not always bring confidence; the more one knows, the

more

Query well
Mr a tall organ per hospital with a throat in Cheltenham where that I
would be [illegible] the whole world. We they have not been as careful
the matter of the Jaguar I always regarded as Blood garden work at the
I say as to the Thr Hop and a medal or [illegible] instead as he could give you the
a report on way

I am sorry my figures do not allow me to agree with my brother
Regius of Cambridge that "of all perilous maladies it (a.p.) is perhaps the
most curable"
A consultant has great difficulty in making his experience of any disease
effective particularly as this very matter of prognosis
A patient is seen once or twice & arouses intense interest and then
vanishes from his clinical ken and the oft repeated impression ——— leave
a blurred image like that of a composite photograph My practice has been to get the
notes of the angina cases in short order, type written & filed away and then at interval my secretary
would write to the Doctor in charge, and add a note

more timid ~~as~~ may ~~become~~ grow. The faculty of looking all round a question, of taking a philosophical view ~~as is said, is apt to be~~ I'd maybe tempered with doubt, and an inability to reach a conclus-ion. ~~Both~~ A cock-sure diagnosis, and a ~~very~~ positive prognosis ~~often~~ may express the assurance of ignorance. In reviewing a long series ~~of cases of angina pectoris~~, the high mortality, and the great frequency of sudden death, give (to the picture a sombre tint, and yet, ~~as~~ I shall hope to show, ~~there are~~ you plenty of bright pat-ches. ~~As~~ The experience of a consultant seeing only the more severe cases, ~~his experience~~ is apt to be misleading, nor is always the lesson of his mistakes so thoroughly learned as by the general practitioner, who lives in the same town with them. ~~Lecture~~ To no disease is the ~~Hippocratic~~ Aphorism more applicable -- Judgement is difficult. ~~Let us see where the chief difficulties arise~~. Now that we know ~~so much~~ more ~~about~~ of the diagnos-is of disease, we talk ~~much~~ less about ~~the~~ prognosis; and to be of any value the latter ~~one~~ must follow ~~precede~~ the former ~~other~~ and grow out of it naturally. ~~In how many cases~~ does the diagnosis ~~embraced~~ may embrace both prog-nosis and treatment; often ~~being~~ the one thing needful, ~~and~~ more than once this has happened ~~to me~~ in connection with the disease under consideration. The first step is to get a clear idea ~~as to~~ of the nature of the affection ~~case~~ -- is it an expression of organic disease of heart or arteries, or is it only a painful disturbance of vascular funct-ion.

From the stand-point of prognosis the cases may be studied in various ways. Naturally the most important consideration relates to etiology. ~~Practically one of~~ In any case three questions ~~are~~ suggested: -- Is ~~the case one of~~ it syphilitic mesaortitis ? Are the ~~coronary~~ arteries involved in a general or local sclerosis? ~~or~~ Is it a so-called funct-ional condition unassociated with organic lesion of the arteries ?

~~The syphilitic form of angina pectoris~~ Syphilis is of the first importance, and ~~we~~ have learned ~~now~~ to recognize the frequency with which this disease attacks the root of the aorta causing angina pectoris, aortic insuffiency and aneurysm. In 17 cases of my series there was a history of syphilis ~~was an important factor~~, and it is interest-

-ing

And yet - to know y the future is naturally the
ardent desire y patient & friends, and whether we utter
or not an opinion must be expressed.

In many of the ~~fatal~~ cases it was not possible to connect the disease directly with the attack

3

interesting to note that a majority of the patients were under 45 years of age. I have already spoken of the lesion, a mesaortitis sometimes limited to the supra-sigmoidal area. A characteristic paroxysm ~~of angina~~ may be the first symptom, a patient may indeed die in the initial his ~~first~~ attack. Nothing may be detected on physical examination; there may perhaps be slight superficial tenderness on pressure over the region of the aorta. ~~Aortic~~ Insuffiency of the valves may come on under observation. ~~One of the most~~ a striking results ~~of the new work on syphilis~~ has been to show the importance of Syphilis ~~it~~ in aortic valve disease, ~~and with the~~ A thorough use of Wassermann's reaction ~~we shall learn to recognize its importance of this disease in causing lesion of the aortic valve.~~ frequency As the post mortems records show, the disease is not always confined to the root of the aorta; in three of my patients it was of the diffuse sclerotic type, without special limitation. The first case of angina pectoris I saw in Baltimore was a lieutenant in the navy, aged 30, who had had syphilis six years before. For a year he had had ~~anginal~~ attacks, and had had to be off duty for many months. There was no enlargement of the heart, but there were systolic murmers at both mitral and aortic areas. With the iodide of potassium he improved sufficiently to return to duty. After having lost sight of him for many years I then heard of him again, that he had remained perfectly well. ~~It is the~~ In no form of the disease ~~in which~~ as the prognosis is ~~often most~~ more hopeful. A man aged 58, seen Oct.28th 1904, had severe ~~the~~ attacks ~~were very severe, and he had~~ with moderate arteriosclerosis. I would not have recognized the specific nature of ~~his~~ the trouble had I not seen him in 1898 with a most interesting syphilitic nephritis and periosteal nodes. The blood pressure was high, the aortic second sound ringing; but it was a favourable circumstance that the albuminuria had disappeared He stood ~~the~~ an anti-syphilitic treatment very well; ~~he~~ progressively improved; the attacks gradually lessened, and he has remained well, ~~ever since~~. It is not always easy to determine whether or not syphilis is a factor, and yet it is well to give the patient the benefit of the doubt. A ~~patient~~ man aged 56, who had had for three months very characteristic anginal attacks had lived just

the

the ~~sort of~~ life likely to bring on ~~the disease~~ -- a gross eater, hard worker, heavy smoker, and yet his arteries were not specially sclerotic, ~~and there~~ was not ~~any~~ enlargement ~~of the heart~~, and the sounds were clear; ~~He~~ had had syphilis 30 years before. He improv-ed ~~on~~ with the use of iodide of potassium, and ~~he~~ had no attacks for more than 4 years. ~~He was a man~~ I saw him very frequently, and it was not always possible to keep him in the 'straight and narrow way'. He died suddenly one night, probably in an attack, before a doctor could reach him. ~~As I have mentioned,~~ in persons under 40 it is always well to bear in mind the possibility of syphilis. ~~In~~ A woman aged 37, whose case had been a great anxiety ~~worry to us, as she had~~ had paroxysms of angina with hypertension, and acute pulmonary symptoms. There was no question as to the severity of ~~the type of~~ the disease. ~~I confess~~ The question ~~possibility~~ of syphilis had not been discussed until she complained of an ulceration of the throat, which Dr.Warfield at once diagnosed as syphilitic. The transformation in ~~her case within~~ a month was nothing less than marvellous. I had not thought ~~there was any~~ a possibility of her recovery.

The outlook ~~though~~, is not always so satisfactory. I follow-ed for a couple of years, with Dr.Julius Friedenwald, the various phases of aortic-root syphilis, in a ~~subject~~ man aged 36, who had par-oxysms of great severity, often associated with collapse, and once on the street with unconsciousness. Aortic insuffiency ~~developed~~ arose under observation. When I saw him, Feb.2nd 1904, he was having attacks every day, and could not walk more than 100 yards without pain and oppression in thechest, "as though there was a stone under the breast-bone growing larger and larger." Marked improvement followed ~~an~~ anti-syphilitic treatment, and he was able to go back to his business for a year or more, and was comparatively free. Then in spite of vigorous treatment the attacks returned, and final-ly in one of them he died.

It is well to remember that a man may die with the sclerot-ic aortitis as the only lesion. John W. aged 34, a farmer, died

in

an angina attack, ofwhich he had had three or four during the fortnight. He was admitted to the hospital May the 25th, and died June the 8th, so that his entire illness did not ~~extend~~ last for more than three weeks and a ~~haaf~~. He had had syphilis nine years before. He wasa healthy, muscular fellow, with a good pulse, sclerotic arteries and an apex beat a little out from the normal position. The attacks were severe, and in one he died suddenly. Beyond dilatation of the chambers, and some ~~chronic~~ passive congestion there was nothing special; the valves were normal; the coronary arteries were normal; th orifices not narrowed. ~~The~~ A characteristic sclerotic ~~variety of~~ aortitis involved the entire vessel. Many of the smaller arteries were thickened.

Prognosis.

"The cardinal fact in the prognosis of real angina is its uncer-
-tainty", with which statement of Walshe's we ~~can~~ all agree, and further he confessed that he knew no method by which we can reasonably tell whether a sufferer will be cut off the next min-
-ute, or survive many years. The individual history, the char-
-acter of the attacks, and the vascular condition are the three important ~~factors on which we can base a~~ Elements which may in the prognosis -- taking it for what it is worth. ~~And we must remember that to know of~~ the future is ~~the all important desire of patient and friends,~~ naturally the ardent and whether we like it ~~or not an opinion must be expressed~~. Much depends on the ~~man~~ patient himself, on ~~the sort of~~ the life he has lead,- the ~~sort of~~ life he is willing to lead. The ordinary high pressure ~~case of the~~ in the business or professional man may find relief, or even cure in the simple process of slowing the engines, reducing the speed from the 25 knots an hour of ~~the~~ a Lucania, to the 10 knots of a "black Bilbao tramp". The difficulty is to induce a man of this type to ~~reduce~~ lessen " the race, an' rack, an' strain". As Willaim Pepper used to say : -- "Give me the life of a hare, not the existence of a tortoise". Not even the terrible out-bursts of pain may suffice to check men of this stamp. Like ~~the~~ Kitchings ship that found itself, many a sensible fellow, whose engines, at 50 or 55, years of age ~~hard~~ gone to pieces on the 'long trail, the out trail' has been refitted and enabled to reach the port of Seventy. ~~Doctors~~ We Doctors are notorious sinners in this respect, but it is so hard to lessen work when in full swing, so much harder than to give up altoget-
-her, and how few of us at 50 or 55 are able to do this? A severe attack of angina may save a man's life. ~~I saw~~ A Congressman ~~who~~ had burnt the candle at both ends,- work and whisky, wine and women, had made a wreck of him at 49, and ~~the~~ a spree culminat~~ed of a spree~~ in a paroxysm of angina in which he nearly died., ~~I saw him~~ Seven years subsequently, in excellent health, in spite of a plus blood pressure, and ~~a~~ moderate sclerosis of the arteries.

He

He dated the change of life from the attack which had frightened him into sobriety. ~~I have several~~ A group of most encouraging cases in which long intervals of good health, and even complete freedom may have followed the adoption of reasonable habits. Last summer I met in ~~Piccadilly~~ London a distinguished American lawyer, whom I had seen ten years ago, in a series of severe attacks, one of which nearly proved fatal. Following in the track of the intercostal pain he had an outbreak of herpes, the only instance I have seen of this complication, After six months rest he resumed work at an easy pace. I saw in the papers a few weeks ago the death of General P. whom I saw in 1901, then aged 65. For two months he had attacks of angina, and once had a succession of paroxysms which kept him in bed for three days.

~~I do not know that very great~~ Not much stress can be laid on the character of the attack so far as the ultimate outlook is con-cerned. The immediate prospect ~~quo ad vitam~~ as per life is always doubtful, as a mild paroxysm may be succedded by a severe one, or death may occur with the appaling suddenness which is one of the features of the disease. The ~~ordinary~~ vaso-vagal features, pallor, sweat-ing, faintness, nausea ~~and vomiting~~ are serious in proportion to their prolongation, and to the resistance they display to remedies. And yet a man may come out of a state which seems absolutely desperate. One does not often see ~~many instances of~~ recov-ery, and subsequent good health, after a paroxysm such as in the following case, which was studied ~~and followed~~ with great interest by Dr. McCrae and myself.

~~Prognosis. Mr.Woodward's case.~~

~~Even~~ In the most desperate ~~cases recovery may follow with~~ good health ~~for some years~~. ~~A man~~ aged 60, J.H.W., ~~was~~ admitted to the private ward March 24th 1904, ~~He had been~~ was a vigorous active man, and ~~had had a great~~ the victim of many acute infections, but not syphilis. He had taken an average quantity of whisky, and had worked hard. In June 1902, when salmon fishing he had his first attack, then a second one in January 1904; a third on Febuary 22nd which was very severe, as and he lost consciousness; a fourth on March 10th, also very severe; and a fifth a few days before he came into the hospital. He was a robust, healthy looking man, with good colour, but with a feeble heart impulse; no heart flatness; distant sounds; pulse of good volume, slightly irregular; mark-ed sclerosis of the arteries. On April the 4th at 1 p.m. he had ~~an~~ a ~~attack~~ syncope in which he looked as if he were dying; the hands and feet were cold and clammy; and ~~he took~~ at intervals ~~deep~~ he sighed deeply ~~breaths~~, and threw up the chin; he was conscious; the pulse from 42 to 48, regular but small; the heart sounds were feeble and distant. By 1.30 the ashen gray colour was replaced by slight lividity; the pulse rose to 52; the blood pressure was 120 m.m. of mercury. At 2 o'clock the pulse was 60, better, quieter, and there was less cyanosis. At 2.30 the pulse was 68; he vomited several times, and at intervals had very deep, sighing respirations. He was in a very critical condition all the afternoon, but gradually improved. Two days later at 1.30 a.m. he had a mild attack ~~with~~ of pain in the region of the heart, ~~and~~ with intermittency of the pulse. He ~~then~~ gradually improved, and left the hospital on June the 23rd. Trough Dr McCrae I have heard from him at intervals, and he has kept very well ~~for two years.~~ This man had six severe cardiac attacks, in one of which he nearly died, and yet he has now remained well and active for the past six years.

Prognosis. Mr.Woodward's case.

Even in the most desperate cases recovery may follow with good health for some years. A man aged 60, J.H.W. was admitted to the private ward Mar

In the attack itself there are two bad prognostic signs -- disturbance of respiration, slow ~~and~~ irregular heart action. The acute orthopmaea with signs of emphysema and oedema of the lung, is ~~a~~ serious ~~condition,~~ and not met with except in grave cases. Death may occur ~~in the attack~~ during, or the attacks may replace those of angina. Slow, gasping breathing, particularly if the patient has become unconsciousness, is of bad omen. Cheyne-Stokes' respiration ~~is~~ a frequent accompaniment, ~~and~~ is a bad sign when it comes on in ~~an attack in~~ a ~~mam~~ who has not had it previously, in connection with cardio-vascular or renal disease. The state of the heart is ~~of~~ very deceptive, ~~value in the prognosis in the attack~~. A man may die ~~a few minutes~~ shortly after an apparently ~~a rest~~ satisfactory examination ~~of the heart~~ Listen to this report, jotted down at the bed-side of a man in an attack, and who died five hours subsequently. "Pulse 92, at first ~~frequently~~ regular and of good volume, but subsequently one or two beats dropped; there is nothing to attract ones attention ~~specially~~ in the pulse (the blood pressure had been taken the same afternoon, it was 160), The artery was not sclerotic; The apex beat ~~is~~ was not visible; and between a high stomach tympany, and an inflated edge of the lung it is not easy to make out the heart lim--its; the sounds are clear at apex and base, ~~the~~ beat drops occas--ionally; there is no gallop rythme, nothing to indicate any serious disturbance; there ~~was~~ is no heightened sensibility over the heart," ~~and no area of anaesthesia~~". This ~~note was made on the heart of a~~ beside a man ~~who~~ had had anginal attacks on and off for a year, ~~and who died in an attack five hours after I dictated it~~. ~~And what was still more remarkable was that~~ The heart was working with not more than 30% of ~~the~~ a coronary circulation; one main stem was entirely obliterated, the other partially.

The small, feeble, rapid pulse is not of such ill omen as one of ~~the~~ fuller, ~~larger~~ volume, with marked arrythmia, ~~particularly the~~ and a slow pulse with unconsciousness is always of grave import.

~~What~~ The circumstances that bring on an attack ~~is almost~~ are of as much moment in the prognosis as ~~the~~ its character. We all ~~know~~ recognize the three ~~factors~~ chief factors

prone

~~prone to cause attacks are~~ emotion, distension of the stomach, and muscular effort, ~~and~~ Of the three emotion is ~~certainly~~ of the least significance. ~~I mean there are so~~ Many instances of slight ~~arterial~~ anginal attacks are brought on by anger, worry, or sudden shock; ~~and~~ but while in ~~any~~ individual cases they may be serious, yet the cause is one rather easier to avoid ~~than the others~~, and ~~it has~~ always has seem-ed to me to be less dangerous, though John Hunter neither thought ~~it~~ to be nor found it so. In many elderly persons with stiff arteries the com-monest cause is stomach disturbance; a full meal, indigestion, flatulency, particularly at nights, is certain to bring on an attack. And there are individuals who are sensitive to this cause only. As one patient expressed it "Had I not to eat I never would suffer".

~~But~~ The angina of ~~muscular~~ effort, the paroxysm that comes on invariably after a man walking a few hundred yards, or after using this arm, ~~it~~ is ~~generally~~ a coronary artery affair, and is as a rule more ser-ious ~~as a rule~~, than that which comes on spontaneously, or as a result of emotion. This feature is ~~It is, I think, one of~~ the most common indic-ations ~~of coronary artery lesion~~. The parallel between ~~it~~ and intermittent claudication has often been drawn, though the cardinal difficulty has been pointed out that in the one case a man stops walking, in the other the heart continues to work. A curious feature in some cases of these ~~types of angina of effort~~ is that a man may be able to walk ~~about all right~~ freely in his place of business, or in his house, and not be able to do so on the street. While constit-uting some of the most distressing cases, the same as even the active dress-ing may bring on pain (angor de toilette), yet life may be pro-longed, as in ~~a very chronic~~ the recent case I mentioned of the ~~unfortunate~~ man who had been a victim for some 11 years, and whose coronary art-eries were calcified to their finest ramifications.

And the third important factor is the patient's cardio-vascular condition; ~~P~~persistent high tension with marked sclerosis of the arteries, occurs in a very large group of cases, but it is important not to over-estimate their seriousness, ~~as~~ The outlook may depend much less upon these factors than on the sort of ~~engin-eer~~ man in control of the existence of them. An ~~man of~~ the 'McAndrew' type will so handle his

engines

Machine the ship
engines that ~~he will~~ make the voyage round the Horn to London with
man
safety; whereas an ~~engineer~~ of a different type will wreck the
Engines
~~machinery~~, and leave ~~this~~ ship a derelict. A large majority of all
Arteries
cases of angina pectoris have no signs of disease of the heart
alone
itself. Of valvular lesions the aortic is important,-insuffiency
in ~~the~~ young ~~man which~~ usually means syphilis; stenosis in the old
~~which usually~~ means calcified aorta narrowed coronary orifices,
and rigid coronary arteries. Disease of the aorta itself is not often recognized. The prognosis of cases of Aneurism beginning with angina is, of course, serious, though as the sac grows the attacks may disappear.

Prognosis.

It was the distinguished President, of this College, John Latham, who in 1812, I believe, fisrt recognized that certain symptoms did not always denote angina pectoris, and shades of angina nolka, and it is a useful division which recognizes a minor and major type of the disease; or what I think is still better, a form without and a form with organic lesions of the cardio-vascular apparatus. A diagnosis of these two forms from each other is an essential preliminary to successful prog--nosis. It may have surprised some of you that the number of cases of mild or functional angina in my list was so small, but I carefully excluded all trifling forms of heart pain in nervous women, and have only considered the cases which presented the features of an anginal paroxysmal. Of the 43 cases there were 23 in women, not so large a percentage as given by many authors. It is useful division to group the cases of this type into the neurotic and toxic; the former occur much more commonly in women and the latter in men. In looking over the histories of 14 cases of the severer organic angina pectoris in women, I see that only in two or three cases was the diagnosis in doubt. The average age was much above the other group 5`6 years. In not a single instance was there absence of ~~some sign, either of~~ sclerosis, high pressure or ~~of heart disease~~, heart disease and the character of the attack in almost every instance stamped the nature of the case. ~~Curiously enough~~ I have been more frequently ~~deceived in~~ mistaken by organic angina for the functional form than vice versa. Two of my worst mistakes were in doctors, and for their sakes I did not regret it, ~~as in~~ since both, great comfort ~~was derived~~ derived from the thought that they were not the subjects of angina vera. One man would have deceived Heberden himself, as he had actually hysterical attacks, at any rate ~~he would have~~ ner--vous outbreaks in which he had spasm of the larynx, and a sort of child-crowing, and he had a ~~distinctly~~ nervous dysphagia. The other patient had not a trace of obvious organic disease, but he had driven his engines very hard. He had smoked excessively, and at the time of the attack was very emotional. He improved so

much

much that we had ~~all~~ congrtaulated ourselves upon the correctness of our treatment and diagnosis. He dropped dead while speaking at the telephone.

~~A great~~ Many sub-divisions have been made of the neurotic form, but for ~~the purpose of~~ prognosis they roughly fall into two ~~divisions~~, the distinction between which is the predominance of the vaso-~~motor~~ constrictor or vaso-dilator phenomena. In many cases the attacks resemble ~~conform exactly~~ to what Gowers describes as vaso-vagal storms. Beginning with coldness of the hands and feet, numbness and tingling, ~~the former features being often subjective,~~ with small pulse; pains are complained of in the heart itself, often more to the left, and ~~rather~~ it in the pectoral rather than in the sternal region; the radiation may be marked up the neck and down the arm, and much more than in the organic form, super-ficial sensitiveness of the skin is noted. The attacks may pass off in the course of an hour or two, but in the severe ones there may be nausea and vomiting; the respiration is quickened, and there is ~~sometimes~~ an indescribable sense of fear and dread. With it all the patient may move about, and there is rarely ~~seen that~~ present the characteristic immobility of the severe forms.

In ~~other cases~~ when the vaso-~~constrictor~~ dilator features ~~are entirely absent~~ predominate. The patient complains of fulness in the head, of a terrible distress in the back of the neck, or a general sense of superfic-ial tension. As one woman expressed it ~~to me~~ : -- "I feel just like an inflated baloon on the point of bursting". The heart's action may be forcible, and there is wide spread throbbing of the arteries. The face and hands may be congested and hot, the face sometimes slightly livid. Following these symptoms, or coming on at the same time, the patient begins to have heart pain, which may ~~reach a grade of great severity;~~ become very severe; the lines of radiation may be characteristic, and there may be ~~a~~ with little symptoms remarkable ~~degree of~~ prostration. One patient whom I saw very often in this type of attack, never had cold hands or cold feet; and on several occasions so distend-ed was the superficial vascular system that bleeding was suggested, but she would never consent. There is rarely much difficulty

in

in determining the character of these attacks, ~~to~~ with which are often associated neurasthenia and hysteria. Occasionally one meets with ~~instances~~ paroxysms of great intensity, in which as the pain reaches a maximum, ~~and~~ the patient is thrown into a sort of tetanic ~~spasm~~. ~~Such an instance I saw~~ In a man aged 32, whose trouble began with palpitation, ~~an extraordinary attack in which he cried.~~ The pain was apparently very severe, and he had stiffness of the fingers, a sort of tetany (cramp) in which they ~~became stiff and cramped, and~~ could not be moved. Sometimes he would get into a state of general rigidity, all the time complaining of terrible agony in his heart. ~~In~~ Many ~~cases the~~ patients have phobiae. Par The majority of these cases do ~~very~~ well, and it sometimes happens, particularly in a man, that a reassurring diagnosis is all the treatment required.

~~It is well to bear in mind that the cases~~ In a few of extraordinary severity ~~and of rapid recurrence~~ a fatal event ~~may~~ happens as in the ~~case~~ patient of Dr.Bullock, to which I referred in the last lecture. ~~The majority of the neurotic cases on my list have~~ While gradually recovered within the course of a year or two; ~~but several~~ cases ~~stand out characterised by great~~ are very obstinate. One ~~young fellow~~ man of 28, who had not worked for five years owing to constant recurrences of pain in the heart, and ~~down~~ the inner side of the left arm; ~~he~~ was exceedingly nervous, and ~~we had him under observation for months~~ after months of treatment, ~~but~~ we could do nothing with him. As he wrote pathetically : --

"I heard you say to the atudents that there was nothing wrong with my heart, but if you had it for a few nights, and felt the ppin in it, you would think quite differently".

~~Several of~~ The worst ~~cases of this kind~~ sort of neurotic angina may follow influenza, and the rapid recurrence of the paroxysms may render a man' life unbearable. ~~I had~~ An old student and valued friend, in practice near Philadelphia, who was a bit nervous, and had occasionally had migraine, ~~but on the whole he had lived a very wholesome sort of life,~~ A month after influenza ~~he~~ began to have the most extraordinary attacks ~~of vaso-motor angina~~. The palor and coldness of his extr-emities exceeded anything I have ever witnessed; nothing could warm them , even after his legs had been for 15 minutes in water

as

as he could bear, when taken out his wife insisted that they were still cold, and he complained of ~~their~~ that they felt ~~ing~~ cold. In the attacks the mental distress ~~was~~ agonizing, and ~~the~~ he had a sense of terrible constriction across the upper part of the chest. He ~~threw~~ threw himself about the bed, and the condition was ~~one very~~ most painful ~~dis-~~ -tressing to witness. ~~The attacks~~ He gradually ~~disappeared~~ recovered.

My experience of an angina which may be termed toxic is very limited. I have not seen more than a dozen instances in which to tea, coffee or tobacco, could the attacks be attributed. ~~I think~~ ~~We have got to~~ we may look forward to an increasing number of cases of the ~~various forms~~ of heart pain, and of the mild type of angina in women, ~~on account of~~ with the rapid increase ~~prevalence~~ of cigarette smoking. I saw last winter in Italy an American woman, whose daily allow-ance of cigarettes was never under 25 a day. She had ~~the~~ an usual ~~symptoms of~~ feature — cardiac pain — only after rising from a recumbent posture, and this would ~~distress~~ worry her ~~so much~~ for half an hour, so that it made dressing in the morning difficult.

It is interesting to note that very heavy smokers may die a vagus inhibition death, exactly such as we see in angina pectoris. ~~I know of~~ Three robust, healthy ~~persons~~ of my acquaintance individuals, not known to have had heart disease; all ~~three were~~ incessant smokers of very strong cigars, ~~they~~ died suddenly in this way, without warning, one while walking, one, a man of 36 fell off his chair at the club, the other a man of 38 died on the beach after bathing

Treatment.

A retrospect of ones experience in treatment will be col-
-oured by the general character of the special disease under consideration. I look back with ~~almost~~ unmixed satisfaction at my experience with Typhoid fever, every aspect of which may indeed be dwelt upon with pride by the ~~the~~ many members of the ~~pp~~profession ~~with the pride of victory~~. On the other hand, Pneu-
-monia arouses feelings, also unmixed, but of a totally opposite kind. There have been certain gains,- ~~and~~ we know our enemy bet-
-ter, but there is no pleasure to be had in looking back upon the record. And the other night in going over case after case of my type-written reports, I could not help taking stock in this way of angina pectoris. And on the whole, in spite ~~of the frequency~~ of the frequency of the Grad arrow ~~mark~~, the feeling was one of satisfact-
-ion. Terrible in certain aspects, angina has ~~three great~~ many cir-
-cumstances in its favour -- it kills late, ~~and~~ it kills quickly, ~~and~~ ~~and~~ we ~~have learned to do~~ are able to do much to lessen the sufferings of the victims, and there are ~~only~~ a certain number of cases but few deaths ~~in my series~~ under 40; no known disease ~~so often~~ kills so peacefully, so painlessly; and there has been real and solid progress in the advance of our knowledge of how to treat it.

As to the Treatment.

As with prognosis, there are three great groups ~~of cases~~ to be considered ~~from the stand-point of treatment~~ -- syphilitic, neurotic and arteriosclerotic.

~~I~~. When a man gets a specific aortitis it means he has not had efficient treatment. There is nothing in the lesion of the art-
-erial wall which mercury and iodide of potassium ~~are~~ can not ~~capable~~ of control~~ling~~, The spirochaetes excite a diffuse granulomatous mesaortitis, with destruction of muscle and elastic ~~elements~~ fibres; and the chief difficulty arises from its insideous progress, so that irreparable damage may be done before any warning is given. The details of treatment offer nothing upon which I need dwell in this audience. ~~We all now recognize~~ The ~~importance~~ value of mercury, no matter what the stage of the syphilis, is emphasized and when one actually sees

the

the spirochaetes in large numbers in the aortic wall, as has been demonstrated by J.H.Wright, ~~The necessity~~ ~~is emphasised~~, since so far as we know ~~it is~~ the metallic drug ~~that~~ acts as a specific, ~~that~~ ~~neutralizes the poison~~. ~~The~~ iodide, clears up the exudate, and as well known will cause a node ~~for example,~~ to melt away, even faster than will mercury. One thing too it does with almost invariable success, ~~it~~ relieves pain. ~~We know now~~ the secret of its great influence in aneurysm, in which , in the early stage it is as good as morphia in giving relief, ~~It~~ clears ~~up~~ the exudate in the media and advent-itia, and in this way relieves the pressure on the nerve elements.

In the neurotic cases with ~~the~~ recognition of a basic disturb-ance in the vaso-motor apparatus, the treatment ~~of this group~~ is most satisfactory, and only a few cases prove refractory. A mod-ified Weir Mitchell cure with hydrotherapy meets the important indication. Long experiecne has taught the value of the wet pack in restoring stability to vascular ataxia. Counter irritation over the heart is sometimes helpful. Of drugs the patients have usual-ly had enough by the time they reach the consultant, and one part of the battle is to wean them from all sorts of mixtures. One patient laid out twenty two prescriptions, and was much aggrieved not to have a twenty third. Sometimes a reassuring diagnosis is the only treatment needed. I have always been sorry that ~~there~~ ~~was~~ an article on angina pectoris was in the British Encyclopedia, and it has helped to make the very name deadly in the ears of the public, and that is one reason why it is an advantage to speak to nervous pat-ients of a false variety, which may mimic every phrase of the true disease. When high tension is present, which is not infreq-uently the case in neurasthenia, the nitrites are helpful, and they have a very special value in the toxic forms, particularly that due to tobacco. In the cases with extreme vaso-motor ataxia, I have long used the extract of ergot (Ergoten), with advantage, two or three grains three times a day.

I have nothing to add to the general knowledge which we all have of the treatment of the severer type of the disease, but I may give you my expe rience very briefly; first of the treatment of the paroxysm itself, and then of the general con--ditions out of which it arises.. It was not to be expected that our generation should have a second therapeutic boom, of equal magnitude to that given us by our distinguished Fellow, Lauder Brunton.

Of the value of amyl nitrite in loosening arterial spasm and relieving the tension and strain, upon which the pain depends we are all agreed. We see its remarkable benefit, particularly in the cases which begin with a wide spread vaso-constrictor influence. Many practitioners express disappointment that it does not always relieve the pain promptly in the severe paroxysms; but it is not itself an analgesic, but only loosens the ~~vascular~~ muscle ~~spasm;~~ grip and it may well be that the painful effect of the dis--turbance of the tension may persist after the spasm itself has disappeared. At any rate experience teaches us that we often have to resort to morphia to relieve the atrocious character of the pain. Moderate doses as a rule suffice; but it is to be remembered that as Burney Yeo pointed out, there are cases extraordin--arily resistant; and I have reported an instance of status anginosus, in which between 10 o'clock on Saturday night, and 1 p.m. on Sunday, five grs of morphia were given hypodermically and by the mouth with relief of the pain, but without giving sleep. ~~I have seen a number of~~ these terrible cases in which attack follows attack, ~~and in which~~ the nitrites are of as little use as water. In despair one may have to resort to chloroform. I well remember ~~that I did~~ to have done so ~~the~~ first ~~time~~ with fear and trem--bling, as the patient's heart was feeble, but it seemed imper--ative to give the poor fellow relief. I have used it ~~in~~ many ~~instances~~ times since, and ~~have~~ never ~~seen~~ noted ill effects; in no case did sudden death occur during the administration or immediately

after

Paragraph at bottom of page and first paragraph of next page come here. 19

after it. Theoretically the practice is a risky one, but neither in my hands nor in those of the late George Balfour of Edinburgh did any ill consequences follow.

Oxygen inhalations are useful, particularly when there is a dusky cyanosis, and in a wide spread asthma-like dyspnoea. In the weak, failing, irregular heart one is tempted to give dig--italis, and it may be tried, preferably ~~by~~ the hypodermic method. There is one type of case in which ~~I think a measure of~~ the drug should be used -- when marked cardiac weakness, following an acute single attack, in a comparatively healthy man. Post mortem experience shows that the lesion in such a case is very likely to be ~~acute~~, blocking one of the coronary vessels, While anatomically the cor--onaries are not endarteries, functionally they are, and an infarct is, we know, very apt to follow; and if ~~following~~ after the attack a pericadial rub ~~exists~~ is heard, we know ~~that~~ this has happened, may be certain. ~~This is the condition in which it is all important to~~ By my maintain the press--ure within the myocardial vessels the extent of the anaemic necrosis may be lessened

In ~~the~~ middle aged man who has had an attack of angina the ~~all~~ one ~~important~~ question is,-has he high tension, with beginning or act--ual sclerosis of the arteries ? And it ~~is~~ may be nearly always answered in the affirmative, ~~In fact~~ ~~by~~ soon as ~~we have~~ a man has crossed that point ~~of~~ in life when the pace is the fastest, whether we put it at 25 with Plato, at 40 with ~~others~~ Montaigne ~~He more kindly put it~~, or at the grand climacteric (63) Dante, the tubing begins to show signs of wear and tear, and the blood pressure grad--ually rises. Now there is nothing more difficult then ~~to~~ to perman--ently reduce a persistent high blood pressure. Drugs have really very little influence upon it. The nitrites are helpful in temp--orally lowering it; but take a man with a persistent pressure of 230 to 240, and you may get the record to 210 or 220, but to get it back to 150 or 160 and keep it there is not often within our power. ~~But more important results may be affected by change in a man's habits of life.~~

Of the value of iodide of potassium, generally in arterial lesion, and specially in the syphilitic variety, we all agree, and

To be more kind, let us put it with the sexagenarian Humboldt it may

This

it may be given at intervals for ~~a period of~~ months. Last winter I had an interesting talk with the distinguished Roman clinician, Marchiafava, whose experience in angina pectoris is very large, and he gave me some reports on cases treated with theobromina, from 20 to 30 grains in ~~the~~ day; A number of the cases had been greatly benefited by the treatment. I have only had the opportunity of trying it ~~in two cases~~, ~~and~~ in one case, the use had to be interrupted on account of a complication; the other patient has been remarkably benefited, particularly in the capacity of taking more exercise.

Much more important results may follow changes in a man's habit of life

I usually give ~~these patients~~ two prescriptions :-- "Go slowly" "Eat less" ~~and~~ I find ~~that~~ a great many patients put ~~much~~ about the same value ~~on them~~ as did Naaman on the prescription of Elisha. A man who has kept a full head of steam in the boilers must learn to lower the pressure, and be content with the quiet 10 knots an hour speed. ~~And the second point is that he must~~ It is very difficult to get a man to stoke his engines in due proportion to the work he expects ~~of them~~. No wonder there is high pressure ~~in a machine,~~ and that ~~it~~ the machine goes to pieces, when the furnaces are stoked for ~~a~~ the Lucania, and the engines are asked to do the work of a London County Council steam-boat.

It is ~~the~~ old story -- the association of a long life with a small intake, ~~and longevity is the of the arteries~~. Cornaro ~~told us that~~ a story well told by in our own day by Cornaro in the 16th century, and our own Sir Hermann Weber, ~~has inculcated the same by precept and example~~.

If I have dealt with this important subject Mr.President, in a somewhat sketchy manner, my apology must be that before such an audience I could not discuss ~~the~~ trite and every-day features of a disease so familiar to us all, ~~but~~ I thought it would be more interesting to ~~if I gave~~ give some you my personal experience. It adds salt to life when men react differently to the same impressions. When I find a colleague of the same way of thinking with myself on a question, there is always with a shade of regret and disappointment, so that I hope you have not all agreed with all of my conclusions. At any rate Sir, ~~following~~ mindful of the wise counsel of Lucretius, I have tried to not based wide opinions on small signs, and so involved myself in the snare of self deceit.

Lobe Lungenlob- angina pectoris ostarrhoea a guestum et ulcus arden
Pl. = an

125.

124.

Man's Redemption of Man

A Lay Sermon, McEwan Hall, Edinburgh,

Sunday, July 2, 1910.

Lond. 1910, Constable & Co, M60, 24°.

physical world -- speaking of the amount of suffering bodily and men-
-tal which is our lot and heritage he says : -- "Not only is the
Creator far off, but some being of malignant nature seems to have got hold

MAN'S REDEMPTION OF MAN.

+ An address to the students of the University of Edinburgh, Sunday July 3rd, 1910; on the occasion of the meeting of the National Association for the Prevention of Tuberculosis.

a Lay Sermon
Melville Hall Edinburgh.
Sunday July 2nd 1910

WILLIAM OSLER, M.D., F.R.S.
Regius Professor of Medicine, Oxford.
President of the Tuberculosis Conference.

William Osler

And a man shall be as a hiding-place from the wind and a covert from the tempest; as rivers of water in a dry place; as the shadow of a great rock in a weary land.

And the voice of weeping shall be no more heard in her nor the voice of crying. There shall be no more thence an infant of days,.. nor an old man that has not filled his days/ H. Isaiah. Chapter.... And they shall build houses and inhabit them, and they shall plant vine-yards and eat the fruit of them. (Isiah)

To man there has been published a triple gospel, - of his soul, of his goods of his body.
growing with his growth, preached and professed in a hundred differ-
-ent ways, in various ages of the world, these gospels but representing the one unceas-
-ing purpose of his widening as his thoughts. have widened. The gospel of his relat-
-ion to the powers unseen has brought him now sometimes hope, and again too often despair;
and In a wide outlook on the immediate and remote effects of the
attempts to establish this special relation, one event alone for us
discredits the great counsel of Confucius, (who realized what a heavy

yoke

+ Newman has an interesting paragraph on this great mystery of the physical world -- speaking of the amount of suffering bodily and men-
-tal which is our lot and heritage he says : -- "Not only is the Creator far off, but some being of malignant nature seems to have got hold

hold of us, and to be making us his sport. Let us say there are a thousand millions of men on the earth at this time; who can weigh

yoke religion might be) to keep aloof from spiritual beings. ~~The~~ life and immortality brought ~~to~~ light by the gospel of Christ, ~~have~~ survived the accretions of twenty centuries, ~~and~~ remain the earnest desire of the best ~~section~~ portion of the race. The gospel of man's relation to his fellow men, is written in blood on every page of history. Quietly and slowly the righteousness that exalteth a nation, the principles of eternal justice, have won acquiesence, at any rate in theory, though as nations and individuals we are still far from carrying them into practice.

And the third gospel, man's relation to nature, is a true evangelion, ~~bringing~~ the glad tidings of a conquest, beside which all others sink into ~~a paltry~~ insignificance -- the final conquest of nature, out of which has come man's redemption of man, ~~which is~~ the subject ~~of my address to you~~ this afternoon.

~~The real curse of Adam lies~~ In the struggle for existence in which all life is engaged, ~~and in which~~ disease and pain loom large as fundamental facts. The whole creation groaneth and travailleth, and so red in tooth and claw with ravine is nature, that it is said, ~~that~~ no animal in a wild state dies a natural death. ~~like one~~ great martyrdom ~~of man~~ -- plague, pestilence and famine, battle and murder, crimes unspeakable, tortures inconceivable, and ~~in his~~ inhumanity ~~to his fellows~~, man has even outdone what appear to be atrocities in nature. In the Grammar of Assent (Chapter x,) Cardinal Newman has an interesting paragraph on this great mystery of the physical world -- speaking of the amount of suffering bodily and men-tal which is our lot and heritage he says : -- "Not only is the Creator far off, but some being of malignant seems to have got hold

hold of us, and to be making us his sport. Let us say there are a thousand millions of men on the earth at this time; who can weigh and measure the aggregate of pain which this one generation has en-dured and will endure from birth to death ? Then add to this all the pain which has fallen and will fall upon our race through gener-ations past and to come. Is there not then some great gulf fixed between us and the good God ? "

Dwelling too exclusively on this aspect of life who does not echo the wish of Euripides : -- "Not to be born is the best, and ~~the~~ next to die as soon as possible ".

Some of you may remember Edwin Markam's poem 'The Man with the Hoe', based on Millet's famous picture.

"Bowed by the weight of centuries he leans
Upon his hoe and gazes on the ground,
The emptiness of ages in his face,
And on his back the burden of the world.
Who made him dead to rapture and despair,
A thing that grieves not and that never hopes,
Stolid and stunned, a brother to the ox ? "

It is a world-old tale, ~~story as old as the Bible where in Deuteronomy, the 28th~~ (xxviii) this trembling heart and failing eyes and sorrow of mind of the natural man ~~are depicted :~~ -- "And thy life shall hang in doubt before thee; and thou shalt fear day and night, and shalt have none assurance of thy life; In the morning thou shalt say, Would God it were even ! and at even thou shalt say, Would God it were morning ! for the fear of thine heart wherewith thou shalt fear, and for the sight of thine eyes which thou shalt see." (Deuteronomy xxviii)

The condition of Hopeful and Christian put by Giant Despair

into

~~hear~~ catch echoes of the Lyceum. In his introductory chapter of his 'Rise of the Greek Epic', Professor Murray dwells on the keen desire of the

Greeks to make life a better thing than it is, and to help in the service of man, a thought that pervades Greek life like an aroma.

into "a very dark dungeon, nasty and stinking to their spirits", and beaten with stripes, and made to feel that the bitterness of death was as nothing to the bitterness of life, illustrates in allegory the state of man for countless centuries. In darkness and in the shadow of death he ~~was~~ lay helpless, singing like the prisoners vain hymns of hope, and praying vain prayers of patience, yet having all the while in his bosom, like Christian, a key called Promise, capable of un-locking the doors of his dungeon. Groping between what Sir Thomas Browne so finely calls 'the ~~old~~ night of our forebeings' and the unknown future -- the dark before and after, he at last came to himself and with the help of this key ~~of Promise he~~ unlocked the mysteries of nature, and found a physical way of salvation."

~~Of man's three gospels one comes from Palestine, one from Greece,~~ and the third from ~~Rome~~. Man's redemption of man is the greatest ~~single~~ triumph of Greek thought. The tap-root of modern science sinks deep in Greek soil, the astounding fertility of which is one of the out-standing facts of history. As Sir Henry Maine says : --"To one small people .....it was given to create the principle of progress. That people was the Greek. Except the blind forces of nat-ure nothing moves in this world which is not Greek in its origin", Though not always recognized the controlling principles of our art, literature and philosophy, as well as those of science, are Hellenic. We still think in certain levels only with the help of Plato, and there is not a lecture room of this university in which the trained ear may not catch ~~hear~~ echoes of the Lyceum. In his introductory chapter of his 'Rise of the Greek Epic', Professor Murray dwells on the keen desire of the

This was misprinted "but" in all eds. until Haeberle's (1937), for which I checked it here. W.W.T. 15.V.37

Greeks to make life a better thing than it is, and to help in the service of man, a thought that pervades Greek life like an aroma. From Homer to Lucian there is ~~was~~ one refrain -- pride in the body as a whole; and in the strong conviction that 'our soul in its rose--mesh' is quite as much helped by flesh as flesh is by soul, the Greek sang his song "For pleasant is this flesh". ~~Just so far as we appreciate the value of the fair mind in the fair body so far do we apprehend ideals expressed today in every department of life. The beautiful soul harmonizing with a beautiful body was~~ is as much the glorious ideal of Plato as it ~~was~~ is the end of the education of Aristotle. What a splendid picture in Book iii of the Republic, of the day when "our youth will dwell in a land of health, amid fair sights and sounds and receive the good in everything; and beauty, the effluence of fair works, shall flow into the eye and ear like a health-giving breeze from a purer region, and insensibly draw the soul from earliest years into likeness and sympathy with the beauty of reason".

The glory of this zeal for the enrichment of the present life was revealed to the Greeks as to no other people, but in respect to care for the body of the common man, we have only seen its fulfilment in our own day, and as a direct result of methods of research initiated by them.

Philosophy, as Plato tells us begins with wonder; and, staring open eyed at the starry heavens on the plains of Mesopotamia, man took ~~his~~ a first step in the careful observation of nature, which carried him a long way in his career. But he was very slow to learn the second step -- how to interrogate nature, to search out her secrets, as Harvey puts it, by way of experiment. The Chaldeans who invented

fathers who had ~~not a point~~ set many feet in the right path; And so it came about that ~~effort, and~~ in the study of chemistry, and in the inventions of Copernicus, Kepler and Galileo modern science took its origin. The growth of the experimental ~~spirit~~ method changed the ~~whole~~ out-look of mankind, and directly led to the ~~enormous~~ developement of ~~the~~ the physical ~~forces~~

LANE

7

and biological sciences by
~~forces~~ which ~~characterize~~ the modern world has been transformed

~~It has been~~ Until ~~lately~~ A slow painful progress, ~~in which, for~~
through three centuries science crept on from point to point, with many mis-

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gnomn, and predicted eclipses, made a good beginning. The Greeks did not get much beyond trained observation, though Pythagoras made one fundamental experiment when he determined the dependence of the pitch of sound on the length of the vibrating cord. X But so far did unaided observation and brilliant generalization carry Greek thinkers, that there is scarcely a modern discovery which by anticipation cannot be found in their writings. Indeed one is staggered at their grasp of great principles. Man can do a great deal by observation and think-
-ing, but ~~he cannot find out nature and her ways~~ with them alone he cannot unravel the mysteries of nature. Had he been able, the Greeks would have done it; and could Plato and Aristotle have grasped the value of experiment in the progress of human knowlege, the course of European history might have been very different.

This organon was absent, Even and in the art of Medicine ~~nor did~~ Hippocrates with all his gen-
-ius did not get beyond highly trained observation, and a conception of dis-
-ease as a process of nature. The Great Pergamite Galen did indeed real-
-ize that the bare fact was only preliminary to the scientific study of disease by experiment, and to the collecting of data, from which prin-
-ciples ~~the~~ of laws could be derived. On the dark horizon of the ancient world ~~A light had arisen in the darkness~~ the brightness of the Grecian dawn so clearly that ~~and it seemed as though~~ the emancipated human mind had an ~~clear and~~ open way. Then something happened -- why, who can tell us? the ~~lamp~~ light failed ~~went out~~, or flickered almost to extinction; Greece died into a mediaev-
-alism that for centuries enthralled man in chains, the weary length of which still hampers his progress. The revival of learning awakened at first a suspicion and then a conviction that ~~something remained of~~ human salvation lay in a return to the old Greek fathers who had ~~set out at first~~ set mans feet in the right path. And so it came about that ~~effort, and~~ in the study of chemistry, and in the inventions of Cop-
-urnicus, Kepler and Galileo modern science took its origin.

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and biological sciences by
forces which characterize the modern world has been transformed

It has been Until lately A slow painful progress, in which, for
through three centuries science crept on from point to point, with many mis-
-takesand many failures, a progress often marred and flecked with the
stains of human effort, but all the same the most revolutionary and
far-reaching advance ever made by man's intellect. We are too close
to the events to appreciate fully the changes which modern science it
has wrought in man's relation to the world; and the marvellous thing
is that the most important of them have been effected within the memory of those living.
Among these Three stand out as of the first importance. My generat-
-ion was brought up in the belief that "Man was in his original state
a very noble and exalted creature, being placed as the head and lord
of this world, having all the creatures in subjection to him. The
powers and operations of his mind were extensive, capacious and per-
-fect" -- to quote the words of one of my old Sunday school lessons.
It is not too much to say that Charles Darwin has so turned man right-
-about-face that he no longer looks upon back with regret to a Paradise Lost,
but that he feels already within the gates of a Paradise Regained.
And secondly, Chemistry and Physics have at last given him control
of the four elements, & he has harnessed the forces of nature As usual Kipling touches the very heart of
the matter in his poem The Four Angels, who in succession offered to
Adam the fire, air, earth and water. But while he was happy in the gar-
-den, content with the apple-tree and its surroundings watching the apple tree in bud, in leaf, in blossom he had no use
for them; but when the apple-tree was cut down, and he had to work
outside of Eden wall, -- then --

Out of blabk disaste r he rose to
He arose to be the master.
Of Water, Air, Earth and Fire.

And this

-ing nor sorrow. Suddenly, without warning, On October 16th, 1846,
in the amphitheatre of the Massachusetts General Hospital, Boston, a
new Prometheus gave a gift as rich as that of fire, the greatest single
gift ever made to suffering humanity -- the prophecy was fulfilled --

neither

neither shall there be any more pain; ~~the~~ mystery of the ages had been solved by a daring experiment by man on man in the introduction of anæsthesia. As Weir Mitchell sings in his ~~splendid~~ poem, 'The

made the man with the hoe look up,
And this mastery, won in our day, has ~~changed the face of the earth~~.

But the third and greatest glory is that the leaves of the tree of science have been for the healing of the nations. Measure as we may the progress of the world -- intellectually in the growth and spread of education, materially in the application to life of all mechanical appliances, and morally, in a higher standard of ethics, between nation and nation, and between ~~man and man,~~ individuals there is no one measure which can compare with the decrease of disease and suffering in man, woman and child. The Psalmist will have it that no man may redeem his brother, but this redemption of his body has been bought at a price of the lives of those who have sought out Nature's proc-esses by study and experiment. Silent workers, often unknown and neglected by their generation, these men have kept alive the fires on the altars of science, and have so opened the doors of knowlege, ~~and so made it possible to~~ that we now know the laws of health and disease. Time will only permit me to refer to a few of the more important of the ~~means~~ measures of man's physical redemption.

Within the life time of some of us
a strange and wonderful thing happened on the earth -- some-thing which no prophet foretold, of which no seer dreamt, nor is it among the beatitudes of Christ himself; only St.John seems to have had an inkling of it in that splendid chapter, in which he describes the new heaven and the new earth, when the former things should pass away, when all tears should be wiped away, and there should be no more cry-ing nor sorrow. ~~Suddenly, without warning~~, On October 16th, 1846, in the amphitheatre of the Massachusetts General Hospital, Boston, a new Prometheus gave a gift as rich as that of fire, the greatest single gift ever made to suffering humanity -- the prophecy was fulfilled --

neither

neither shall there be any more pain; the mystery of the ages had been solved by a daring experiment by man on man in the introduction of anæsthesia. As Weir Mitchell sings in his ~~splendid~~ poem, 'The Death of Pain': --

> Whatever triumps still shall hold the mind,
> Whatever gifts shall yet enrich mankind,
> Ah ! here, no hour shall strike through all the years,
> No hour so sweet as when hope, doubt and fears,
> 'Mid deepening silence watched one eager brain
> With God-like will decree the Death of Pain.

At a stroke the curse of Eve was removed, that multiplied sorrow of sorrows, ~~that~~ in all ages ~~has stood for~~ representing the very apothesis of pain.

The knife has been robbed of its terrors, and the Hospitals are no longer the scenes of those appalling tragedies that made the stoutest quail. Today we take for granted the silence of the oper--ating-room, but to reach this Elysium we had to travel the slow road of laborious research which gave us first the chemical agents, and then brave hearts had to risk reputation, and even life itself in experiments, the issue of which was long for ~~many years~~ seemed doubtful. Paragraph More wide-spread in its benediction, as embracing all races and all classes of society, is the relief of suffering, and the prevention of disease through the growth of modern sanitary science, in which have been fought out ~~some of~~ the greatest victories in ~~our~~ history. I can only refer to three subjects which illustrate and lead up to the ~~great~~ question which is in the minds of all of us today.

You have in Scotland the merit of the practical introduction of a ~~new idea~~ method which has revolutionized the treatment of wounds, and changed the whole aspect of modern surgery. I am old enough to have

been

out. It is [illegible]

in this city within 50 years there has been an annual saving of from four to five thousand lives, by measures which have directly prevented

and limited

limited the spread of infectious diseases, ~~and it is only within~~ a ~~comparatively few years~~. The man is Sir Henry Littlejohn ~~is~~ still alive, who

been a dresser in a large general hospital in the pre-Listerian days, when it was the rule for ~~a~~ wounds to suppurate, when ~~the~~ cases of severe pyaemia and saeptaemia were so common that surgeons dreaded to make even a simple amputation. In the wards of the Edinburgh Royal Infirmary and of the Glasgow Royal Infirmary Lord Lister's experimental work on the healing of wounds led to results of the deepest moment to every indiv-idual subject to an accident, or who had to submit to an operation. It is not simply that the prospect of recovery is enormously enhanced but Lister's surgery has diminished suffering to an extraordinary degree ~~the suff-ering~~. In the old days every wound which supurated had to be dressed, and there was the daily distress and pain, felt particularly ~~in the case of~~ young children. Now even after operations of the first magnitude the wound may have but a single dressing, and the after-pain is reduced to a minimum. How well the older ones of us realize that between anaesthetics and acepsis ~~the~~ hospital life has undergone a complete revolution. I asked the Superintendent of Nurses at the Royal Infirmary to let meknow how many patients last night in the wards ~~were in~~ had actual suffering; ~~the figures which she has kindly given me are~~ and she sent word that about one in eight had some pain, not all of them acute pain

But mans redemption of man is nowhere so well ~~better~~ shown ~~than~~ as ~~The third great victory is~~ in the abolition and prevention of the group of diseases which we speak of as the fevers, or the acute infections. This is the ~~great~~ glory of ~~British~~ medicine, the science of ~~based~~, nowhere in the world have ~~the great~~ its lessons ~~of science~~ been so thoroughly carried out as in this country. It is too old a story to retell ~~here~~ in detail, but I may remind you that in this city within 50 years there has been an annual saving of from four to five thousand lives, by measures which have directly prevented

and limited

limited the spread of infectious diseases, ~~and it is only within~~ ~~a comparatively few years~~. The man is Sir Henry Littlejohn ~~is~~ still alive who made, ~~I believe,~~ the first sanitary survey of the city. When one reads the account of the condition of the densely crowded districts on the south side of the High Street, one is not surprised that the rate of mortality was 40 and over per thousand. That you now enjoy one of the lowest death rates in Europe -- 15.3 per thousand for last year -- is due to the thoroughness with which measures of recognized efficiency have been carried out. When we learn that last year there were no deaths from small-pox ~~last year~~, not one from typhus, and only 21 from fevers of the zymotic group, ~~one can~~ it is scarcely credible that all this has been brought about within the memory of living men. It is not too much to say that the abolition of small-pox, typhus and typhoid fevers has changed the character of the medical practice in our hospitals. In this country typhoid fever is in its last ditch, and though a more subtle and difficult enemy to conquer than typhus we may confidently hope that before long it will be as rare ~~as typhus.~~

Here I would like to say a word or two upon one of the most terrible of all acute infections, the one of which we first learned ~~to~~ the control ~~efficiently~~ through the work of Jenner. A great deal of lit-erature has been distributed casting discredit upon the value of the prevention of small-pox vaccination. I do not see how any one who has gone through ~~small-pox~~ epidemics as I have, or who is familiar with the history of the subject, and who has any capacity left for clear judgment, can doubt its value, ~~of vaccination, or throw discredit upon it, the most important single measure for preventing the spread of small-pox.~~ Efficacy.

Some months ago I was twitted by the Editor of the Journal of the Anti-vaccin-ation league for a curious silence on this subject. I would like to issue

of human achievement, [illegible] one of the most striking extraordinary experiments ever made in sanitation is in progress. The digging of the Panama Canal was acknowleged to be a question of the health of the workers. For four centuries the Isthmus has been a white

white man's grave, and ~~at one time~~ during the French control of the Canal, the mortality ~~ran to~~ reached the appalling figures of 170 per thousand. Even under the most favourable circumstances it was extraordinarily

a Mount Carmel-like issue a challenge to any ten unvaccinated priests of Baal ~~believers in anti-vaccination~~, ~~i.e.~~ ~~believers who have had strength enough of conviction never to have been vaccinated.~~ I ~~would~~ will take ~~in the next severe epidemic, (if available!) it should have to be a severe one)~~ 10 ~~well~~ selected vaccinated persons, and ~~go into that~~ help in epidemic ~~to help and to nurse side by side~~ with ~~the~~ ten selected unvaccinated persons, ~~whom~~ (if available!) I should ~~prefer to select~~ choose three members of parliament, three anti-vaccination doctors, if they could be found, ~~the rest~~ and four anti-vaccination propagandists. And I will make this promise-neither to jeer nor to jibe when they catch the disease, but to look after them ~~care-fully~~ as brothers, and for the ~~four~~ three or ~~five~~ four who are certain to die I will try to arrange ~~a burial~~ the funerals with all the pomp and ceremony of an anti-vaccination demonstration.

~~Preventative medicine was~~ A blundering art until 30 or 40 years ago ~~when it~~ was made a science by the discovery of the causes of many of the ~~most~~ serious epidemic diseases. It is ~~in~~ particularly in connection with the great plagues of the world that man's redemption of man may be in the future effected; I say in the future because ~~in civilized countries~~ we have only touched the fringe of the subject. How little do we appreciate what even a generation has done! The man is only just dead who gave to his fellow-men the ~~power to~~ control of cholera. Read the story of ~~the~~ yellow fever in Havanna and in Brazil if you wish to get an idea of the ~~magnificent achievements~~ power of experimental medicine; there is nothing to match it in the history of human achievement, ~~and There is going on~~ Before our eyes today one ~~of~~ the most ~~extraordinary~~ astounding experiments ever made in sanitation is in progress. The digging of the Panama Canal was acknowleged to be a question of the health of the workers. For four centuries the Isthmus has been a

white

white man's grave, and ~~at one time~~ during the French control of the Canal, the mortality ~~ran to~~ rose reached the appalling figures of 170 per thousand. Even under the most favourable circumstances it was extraordinarily high. Month by month I get the Reports which form by far the most interesting sanitary reading of the present day. ~~There are more to day~~ Of more than 50 thousand ~~white families with their families -- of these being white; 50 thousand employees,~~ people Employees (about more than 13 thousand of whom are white). The death rate per thousand for the month of March was 8.91, a lower percentage, I believe, than any city in the United Kingdom, and very much lower than any city in the United States. It has been brought about in great part by researches into the life history of the ~~organism~~ parasite which produces malaria, and by the effective measures taken for relief ~~are~~ its destruction. Here again is a chapter in human achievement for which it would be hard to find a parallel. But let us not forget that these are but illustrations of ~~a~~ possibilities of wide spread later organization on modern lines. To make these sanitary blessings available in the tropics is the heaviest burden of the white man; how heavy you may know from the ~~appalling~~ startling figures which have just been issued from British India. ~~that is~~ Exclusive of the native states for the year 1908 the total ~~of~~ deaths from fever and cholera exceed five millions, out of a population of 226 millions. The bright spot in the picture is the diminution of the mortality from plague -- not fewer than a million fatal cases as compared with 1907.

These ~~is an~~ are brief indications to you of the lines alongwhich effective progress is being to be made in man's redemption by man. And all this has a direct bearing upon the disease, the fight against which brings us together this week. Tuberculosis is one of the great infections of

the

a widening of knowledge, [illegible]

~~shifted~~ shifted and the picture is, ~~making~~ a brighter ~~picture~~. Much has been taken -- nothing can bring back the hour when sin and ~~sorrow and suffering~~ disease were corrolated as surely as night and day; ~~but against this is to be placed~~ and with this has been the enormous gain ~~of~~ of a new outlook on the value of life. There are tones in human sentiment today which the ancients never heard, which

indeed

indeed our fathers heard but faintly, and did not recognize. The human heart by which we live has been touched as with the wand of Prospero. ~~W~~ What has availed the sceptered race, what the glory that

of the world, and it has been one of the triumphs of ~~the world~~ our generation to determine its cause. With the improvement of sanit-ation there has been ~~an extraordinary~~ a reduction in its mortality, amounting since 1850 to above 40%. But it still remains the most formidable single foe, killing a larger number of people than any other disease -- ~~56,000~~ some 60 000 in ~~England and Wales~~ Great Britain & Ireland in 1908; ~~in Scot-land;~~ and 589 of this city. Practically between 10 and 11 per cent of all deaths are due to it. A plain proposition is before the people ~~of this country.~~ We know the disease,- how it is caused, how it is spread, how it should be prevented, how in suitable cases it may be cured. How to make this knowlege effective is the prime reason of this conference. It is a campaign for the public; past history shows that it is a campaign of hope; The measures for its stamping out, on paper though simple, present difficulties ~~which are~~ inter-woven with the very fabric of society, but they are not insuperable, and are gradually disappearing. It is for this ~~very~~ reason we urge you to join with enthusiasm in the crusade, remembering however that it can only ~~be by~~ by the prolonged and united efforts carried through of several generations can place ~~before~~ the disease ~~will be placed~~ in the same category with ~~of~~ typhus fever, typhoid and small-pox.

In the comedies and tragedies of life our immutable human nat-ure reacts ~~today~~ very much as in the dawn of science, and yet with a widening of knowlege, ~~the~~ lights and shadows of the landscape have ~~are~~ ~~shifted~~ shifted and the picture is ~~making~~ a brighter ~~picture.~~ Much has been taken -- nothing can bring back the hour when sin and ~~sorrow and suffering~~ disease were corrol-ated as surely as night and day; and with this has been the ~~but against this is to be placed~~ ~~the~~ enormous gain ~~of~~ of a new outlook on the value of life. There are tones in human sentiment today which the ancients never heard, which

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their significance

indeed our fathers heard but faintly, and did not recognize. The human heart by which we live has been touched as with the wand of Prospero. ~~Of~~ What has avail~~s~~ the sceptered race, what the glory that was Greece, or the grandeur that was Rome, of what avail even has been the message of the gospel, while the people at large were ~~are~~ haunted by fear and care, ~~and~~ stricken by the pestilence of the darkness and the sickness of the noon-day? The new socialism of Science with ~~has~~ a definite mission ~~to the individual man, and~~ cares not a rap ~~does it care~~ for the theories of Karl Marx, Ferdinand Lasalle, or of Henry George; still less for the dreams of Plato or of Sir Thomas Moore, only ~~in so far~~ as they help ~~so~~ to realize ~~the great relation of science to~~ the well being of the citizen. Nor is there need to fear that in weighing the world in our balance we may drain the sap of its life, so long as we materialize in the service of man those eternal principles on which life rests - moral fervor, liberty & justice

Note This address was delivered at a Service held for the students the University of Edinburgh in connection with the Edinburgh meeting the National association for the Prevention of Tuberculosis

~~Never in its history has~~ The outlook for the world as represented by Mary and John and Jennie and Tom has never been so hopeful. There is no place for despondency or despair. Let the dour dis-peptics in mind and morals, who sit idly croaking like ravens ~~get~~ into the arena ~~and find their cure in fighting with their fellows~~ and wrestle for their flesh and blood against the principalities and powers represented by bad air and worse houses, by drink and disease, by needless pain, and by the loss annually to the state of thousands of valuable lives -- let them fight for the day when a man's life shall be more precious than gold, not as ~~it~~ now ~~it does~~ when the cheapness of life is every day's tragedy.

If in the memorable phrase of the ~~old~~ Greek philisopher Prodic-us 'That which benefits human life is God', we may see in this new gospel a link betwixt us and the crowning race of those who eye to eye shall look on knowlege, and in whose hand nature shall be an open book, an approach to the glorious day of which Shelley sings so glor-iously : --

Happiness

And Science dawn though late upon the earth;
Peace cheers the mind, health renovates the frame;
Disease and pleasure cease to mingle here,
Reason and passion cease to combat there,
Whilst mind unfettered o'er the earth extends
Its all subduing energies, and wields
The sceptre of a vast dominion there.

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